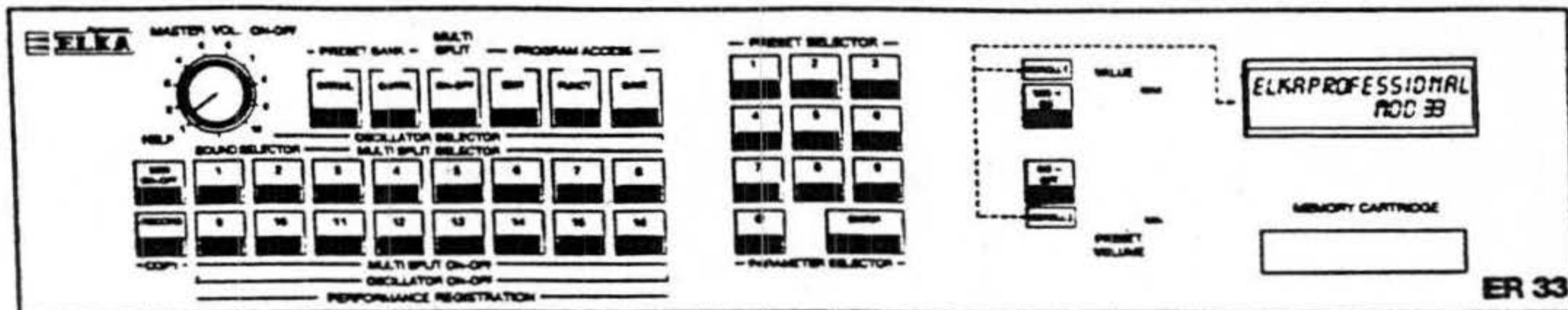


ER 33 DIGITAL PROGRAMMABLE RACK SYNTHESIZER MODULE

OPERATING MANUAL

# ER 33 RACK SYNTHESIZER

ELKA would like to thank you for choosing the ER 33. This instrument has been designed to produce sounds of the highest quality and to guarantee a very high standard of reliability. In order to obtain the maximum performance from this instrument, we advise you to follow the instructions in this manual with extreme attention.



## SPECIFICATIONS

The ELKA ER 33 RACK is a digital programmable synthesizer module with dynamic touch sensitivity functions and SECOND TOUCH (pressure control).

The secret of the ER 33 is based on the use of a digitally controlled generator (DCG), capable of generating nine voices.

The digital generator DCG is made up of two completely separate "Sounds", in order to be able to EDIT or Programme the sound into small blocks.

The ER 33 has 96 Presets, of which 32 are programmable.

The memories contained in the RAM 33 or ROM 33/1 cartridges, expand the internal memory of the instrument by 32 Presets.

A 32 character display, guides the use of the various functions, displaying all the parameters with the relative information (HELP function) thereby making the use of the instrument very much easier.

Of extreme importance in live playing are the PERFORMANCE REGISTRATIONS which, by means of the 16 buttons, allow the memorizing, as well as the PRESETS, of all the playing facilities (WHEEL, MULTISPLIT, MIDI, etc.).

Thanks to MULTISPLIT, it is possible to divide the keyboard into eight sections, each with its own different timbre and MIDI channel. This permits the connection of the ER33 to a multi-track sequencer, thereby obtaining surprisingly realistic orchestral effects.

## PRECAUTIONS

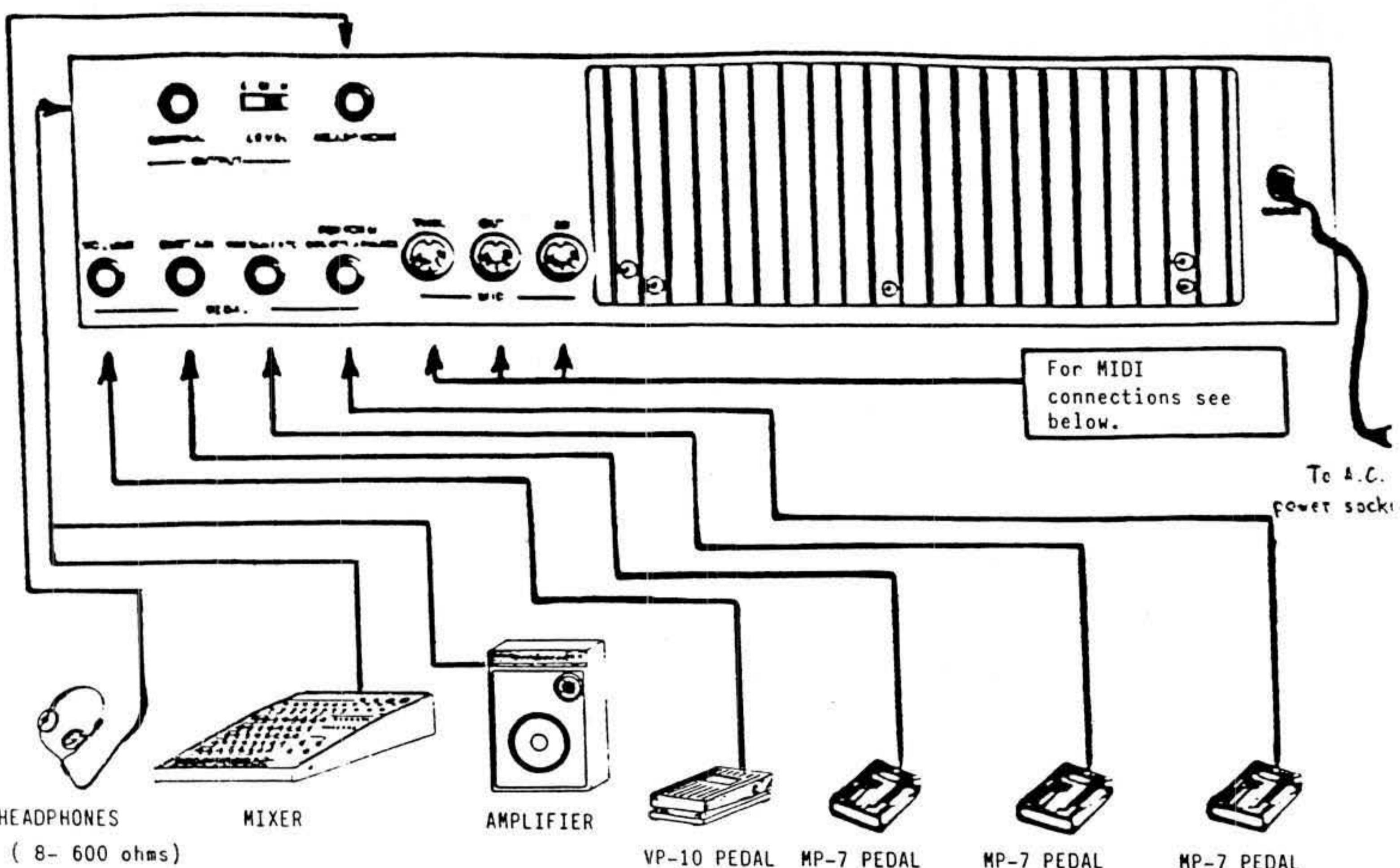
To avoid damage and defective working, do not use or leave the instrument, for long periods, in direct sunlight, in extreme high or low temperature or humidity conditions, or in dusty and sandy areas.

Be sure to check that your AC power supply outlet provides the correct voltage for the instrument.

The instrument is supplied with an internal Lithium battery, which keeps the internal memory, used for memorizing the timbres and Performance Registrations, in activity, also when the instrument is turned off. The life of this battery greatly depends on the ambient conditions; however the instrument's internal computer will give warning on the display, with the message "Error Replace Battery" when a new one is necessary. It is advisable to have the battery replaced by a qualified technician.

To clean the outside surfaces of the instrument, use only a soft dry cloth. Never use petrol, alcohol or other solvents, as these will cause damage to the surface finishes and panel.

## CONNECTIONS



### N.B. -

Before making the above connections, ensure that all the instruments, amplifiers, synthesizers, etc.) are turned off.

### OUTPUT

To connect the ER 33 to a single amplifier or mixer input, use the GENERAL output socket.

With the LEVEL selector, you can set the correct output level to match your amplifier's input sensitivity. In the three positions L (LOW), M (MEDIUM) and H (HIGH), you will obtain a low, medium or high output level.

### HEADPHONE

Private listening can be achieved by plugging in a pair of headphones (8-600 ohms) into the HEADPHONE socket on the back panel.

### PEDAL

Control of the overall volume of the ER 33 is made by use of a VP-10 volume expression pedal, which should be plugged in to the appropriate socket.

By connecting a MP 7 pedal to the other three PEDAL sockets you will be able to control the SUSTAIN (obtaining the same effect as with the sustain pedal on a piano), the PORTAMENTO ON/OFF and the PERFORMANCE REGISTRATIONS sequence.

### MIDI

These three sockets enable the ER 33 to communicate with other MIDI compatible instruments.

MIDI IN = By connecting to this socket, you will be able to control the ER 33 from other keyboards, sequencers or computers.

MIDI OUT = The ER 33 can transmit MIDI information to other instruments by using this socket.

MIDI THRU = The information obtained from this output socket is none other than an exact copy of that received by the MIDI IN socket, and can be used to connect several instruments in cascade.

### MEMORY CARTRIDGES

The RAM 33 and ROM 33/1 cartridges should be inserted in the appropriate port on the front panel.

### MAINS

Connect the power supply cable to an A.C. voltage output socket of the correct voltage. On connecting the amplifying equipment, it is advised that only one part of the equipment (synthesizer, amplifier or mixer) be connected to the ground pin on the mains plug, to avoid annoying mains derived hum.

# MIDI CONNECTIONS

The MIDI (Musical Instrument Interface) is a digital interface which allows different types of musical instruments (MIDI compatible) to communicate with each other.

In the case of the ER 33, this interface permits the transmission of the data of all the outstanding features of this synthesizer module to other instruments and using the same techniques can receive all the necessary MIDI information needed to control these same functions from any other MIDI compatible instrument.

MIDI IN, MIDI OUT and MIDI THRU are the three sockets by means of which the ER 33 can be connected to a keyboard, sequencer, synthesizer etc., as explained in the CONNECTIONS section.

For some examples of various MIDI connections, you should consult Fig. 1 MIDI CONNECTION EXAMPLES (below).

The ER 33 can receive the following information on the MIDI bus (MIDI IN):

1. KEYBOARD DATA (Key On / Key Off).
2. KEY VELOCITY SENSITIVITY (Keyboard Dynamics)
3. SECOND TOUCH (Pressure used on the keys after the note has been played).
4. PROGRAM CHANGE (changing of the PRESET number).
5. MODULATION CONTROL (WHEEL, MODULATION, SECOND TOUCH).
6. PEDAL EFFECTS (Volume Pedal, Sustain Pedal, Portamento Pedal).
7. SYSTEM EXCLUSIVE

N.B. If the unit connected to the ER 33 does not provide all these functions, then the ER 33 will only be concerned with the data transmitted from that unit. For example, if the instrument does not provide for dynamic control, then the ER 33 will not be able to have this function. When the SYSTEM EXCLUSIVE is activated, the connecting of two ELKA instruments (EK44 - EK22 - ER33 - EM44 - EM22) will also permit the number of the PERFORMANCE REGISTRATIONS to be transmitted. By means of SYSTEM EXCLUSIVE it is possible to transmit and receive from a computer, all the information regarding the ER 33 (PARAMETERS, MULTISPLIT, MIDI CHANNELS, PERFORMANCE REGISTRATIONS, ETC.).

The ER 33 transmits the following MIDI data (MIDI OUT):

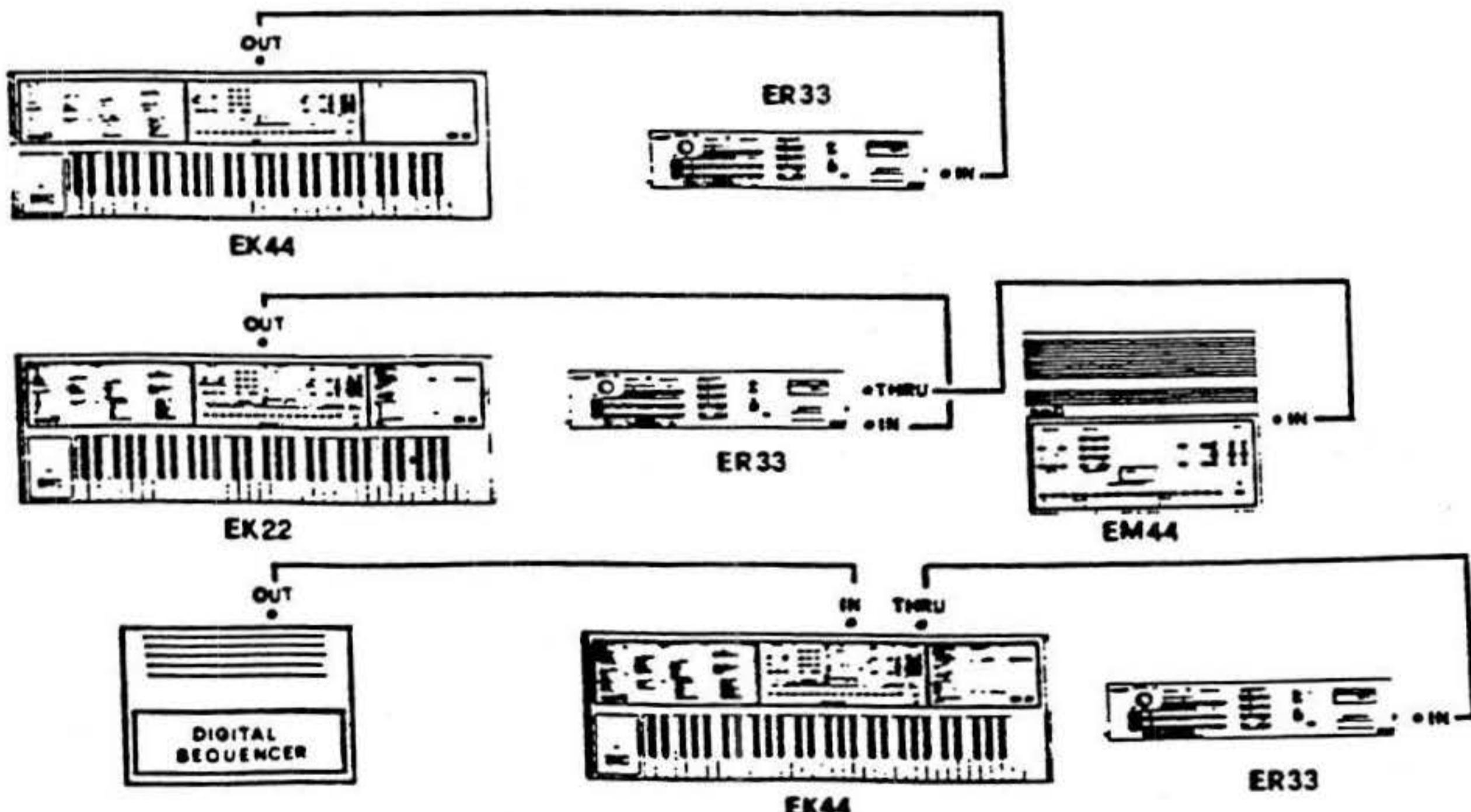
1. PROGRAM CHANGE
2. PEDAL EFFECTS
3. SYSTEM EXCLUSIVE

To connect the ER 33 to another MIDI instrument you must use a MIDI DIN Standard connecting cable, remembering the general rule that two instruments can receive or transmit from and to one another only if the same MIDI channel has been selected.

N.B. USE ONLY 3-PIN MIDI CONNECTING CABLES.

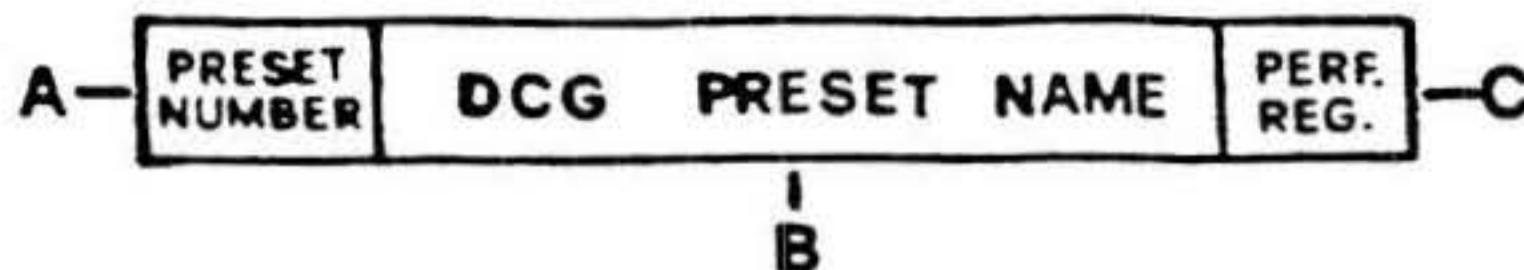
For further information on the MIDI, read SPLIT & MIDI EDIT in the FUNCTION PARAMETER section.

FIG. 1 MIDI CONNECTION EXAMPLES



## PRESET SELECTION

Before switching the instrument on, ensure that all the connections have been carried out correctly. If so, then switch on the instrument by turning the **MASTER VOLUME** control in a clockwise direction. At this point, after a few seconds, the display will show the following information:



- A - Indicates the PRESET number. The prefix I or C shows whether the PRESET is internal or from the CARTRIDGE.
- B - Name of PRESET.
- C - Number of the PERFORMANCE REGISTRATION in operation (the prefix I or C indicates whether the case of an internally recorded PERFORMANCE REGISTRATION or that of one from the CARTRIDGE).

Instant selection of one of the 96 PRESETS already programmed, is now available by means of the numeric keyboard, **PRESET SELECTOR**.

Then form the number, having first controlled the numeric reference table of the PRESETS situated on the top panel.

The display will begin to flash and will stop only once you have pressed the **ENTER** button.

The name of each new PRESET will appear on the display and it is immediately ready to be played.

The overall volume is controlled by the **MASTER VOLUME** control. The volume of each PRESET (also in the MULTISPLIT mode) is controlled by the **MULTISPLIT VOLUME** potentiometer.

By inserting the CARTRIDGE, you will have the possibility of expanding the capacity of the ER 33's memory by another 32 PRESETS and 16 new PERFORMANCE REGISTRATIONS, these then being an alternative choice to the 32 PRESETS and 16 PERFORMANCE REGISTRATIONS which can be saved in the instrument's internal memory system. To select any one of the PRESETS or PERFORMANCE REGISTRATIONS from the CARTRIDGE, first press the **CARTRIDGE** button in the PRESET BANK section, then form the number of the PRESET required (from 65 to 96 only) or press one of the 16 PERFORMANCE REGISTRATIONS. If you select a PRESET or PERFORMANCE REGISTRATION from the CARTRIDGE, when in fact the abovementioned cartridge has not been inserted into the rear port, then the message "Error" will appear on the display.

To pass from a CARTRIDGE PRESET to an INTERNAL PRESET, just press the button marked **INTERNAL** in the PRESET BANK section.

## MULTISPLIT

By pressing the **MULTISPLIT** button you activate the MULTISPLIT function.

MULTISPLIT allows a further division of the keyboard, up to a maximum of eight distinctive sections, with eight PRESETS and eight different MIDI channels.

By means of the two **SCROLL I** and **SCROLL C** buttons you can read all the indications concerning the eight SPLITS on the display, that is, the number of SPLITS, the PRESET (which can be modified by the method already described), the separation point (SPLIT POINT) and lastly, the **LOCAL OFF** control, which indicates which SPLIT number is not in operation on the keyboard.

This control only works on the keyboard version of the 33 model.

The volume of each SPLIT is controlled by the **MULTISPLIT VOLUME** potentiometer. The volume acts on the PRESET shown on the display.

The eight SPLITS have a possible maximum of nine polyphonic voices, with dynamic assignment along the keyboard.

Therefore, if you choose to play one of the eight with, let's say, four notes, you can play the remaining five notes, in one or more of the other SPLITS. (See Fig. 3 in SPLIT POINTS in the SPLIT & MIDI EDIT section of the FUNCTION PARAMETERS.

Remember that to obtain the MULTISPLIT effect, you must have a keyboard, sequencer or other instrument that has the possibility to transmit on several channels, or else you will have to set the ER 33 in the OMNI ON mode. Only in this way will you be able to have the MULTISPLIT effect on your keyboard.

For the setting up of the OMNI - ON and OFF mode and for MULTISPLIT, you should read "SPLIT AND MIDI EDIT" in the FUNCTION PARAMETERS section.

## PERFORMANCE REGISTRATION

Thanks to the sophisticated technology employed by ELKA in the design of EK 44, it is possible to programme and memorize, by means of the 16 buttons of the **PERFORMANCE REGISTRATION** section, several important functions of the instrument and recall them even during a particular sequence of a performance. In this way, you can change the recordings already made with exact timing and without any loss of continuity in the sequence.

With the 16 buttons of the **PERFORMANCE REGISTRATIONS**, the memorizing of the following is possible:

- a - Presets assigned to NORMAL or MULTISPLIT function.
- b - SPLIT position on keyboard.
- c - Volume of PRESETS and of all the SPLITS.
- d - All the values chosen in the FUNCTION parameters 1-2-3-4-5-6-13-14-15-16-17-18-19-20-21, by following the procedure described further ahead in the instructions.

After having decided the TIMBRES in point a (above), the SPLITS (b), the VOLUMES (c) and the various values of the FUNCTION parameters (d), press the **RECORD** button at the end of the line of **PERFORMANCE REGISTRATIONS** buttons together with one of the 16 buttons whenever memorizing of the a-b-c-d situation, outlined above, is required.

Take into account that the PERFORMANCE REGISTRATION will be saved in the internal memory or in that of the cartridge, depending on which of the two buttons, **INTRNL** or **CARTR.** (PRESETS BANK) has been pressed.

## EDIT & FUNCTION

By using EDIT and FUNCTION, access to all the programming parameters of the instrument, is available.

With the push-button, EDIT, selection of all the parameters concerning the programming of a PRESET becomes possible, while pressing the FUNCT. button activates those control parameters of the instrument used during a performance (performance parameters).

To vary the PRESET or performance parameters, follow the procedure below:-

- 1 - Press the EDIT or FUNCT. button. The last parameter number that was recalled will always be shown on the display.
- 2 - Form the number of the parameter to be modified, after having consulted the appropriate table, and then press the ENTER button. The table covering the EDIT parameters is on the top panel and refers to the numbers from 1-12 and 21-38, as is the Performance parameter table (FUNCTION) numbers 1-23 (See note 1 below).
- 3 - The parameter in question and its value will now be shown on the display. By means of the VALUE potentiometer and the -/On/Yes and -/Off/No buttons it is possible to modify the values of the parameters. Using the potentiometer for the bigger variations while the two buttons can be used for unit by unit variations.
- 4 - Once the parameters have been corrected, to leave the EDIT or FUNCTION mode, press the INTRNL. or CARTR. button.

After this last operation, both the parameters of PRESET and those of performance remain active and can be memorized: the first by means of the SAVE procedure, while the second by using the PERFORMANCE REGISTRATIONS. On leaving the EDIT or FUNCTION procedure a dot will be shown to the right of the PRESET number or FUNCTION just edited and to that of the PERFORMANCE REGISTRATIONS, thus indicating the temporary change of timbre or PERFORMANCE REGISTRATION. Both the PRESET and PERFORMANCE parameters, if not memorized will be cancelled as soon as another PRESET or PERFORMANCE REGISTRATION is selected, or if the instrument is switched off.

One of the most important features of the ER 33 is the HELP function. Using this button, after having entered into the programming with EDIT or FUNCTION, provides some very useful information on all the parameters, thus, making the actual programming itself very much easier.

In fact, all the information regarding the chosen parameter, will be shown on the display. To interrupt this operation, push HELP, a second time, or wait until the end of the phrase. The display will now show the selected parameter.

**Note n° 1** - It is also possible to move from one parameter to another, without forming the number, by holding down the ENTER key and moving, with the other hand, the VALUE control to - or +. In this way all the parameters will be displayed one after the other.

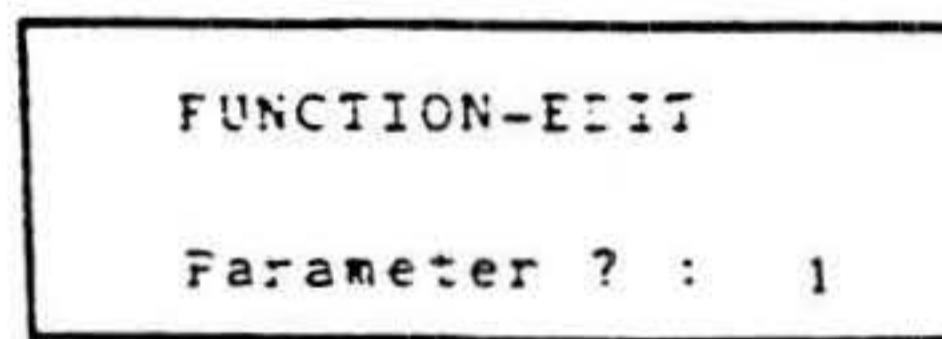
## FUNCTION PARAMETERS

The FUNCTION button, to be found in the PROGRAM ACCESS section on the front panel to the left of the numeric PRESET SELECTOR key pad, allows changes to all the various Performance Functions not directly concerned with the Timbre to be made.

This is the first display to be seen on the pressing of this button, and when it appears, you should then just select the FUNCTION PARAMETER that you want to modify.

All of these Performance Control Functions, except some (7-8-9-10-11-12-22), can be memorized by means of the PERFORMANCE REGISTRATIONS. Exit from the FUNCT. procedure is obtained by pressing INTRNL or CARTR.

**Modulation Control MC** - In the ER 33, all types of modulation like VIBRATO, LEVEL and PITCH can be controlled by several



→ PRESET SELECTOR N°'s then ENTER

different means, such as the WHEEL, the MODULATION SWITCH or WHEEL, and the SECOND TOUCH, which is a pressure controlled action which comes into operation when using extra pressure after the first pressing of any key on the keyboard.

The first three FUNCTION parameters are used to put into operation the various control systems and to vary the intensity of the effect.

## 1 • VIBRATO • 0-7

By means of the first three buttons of the **PERFORMANCE REGISTRATIONS**, you can put into operation any one of the three methods of modulation control.

With button N. 1 you can activate the **WHEEL**, then move it to obtain the effect.

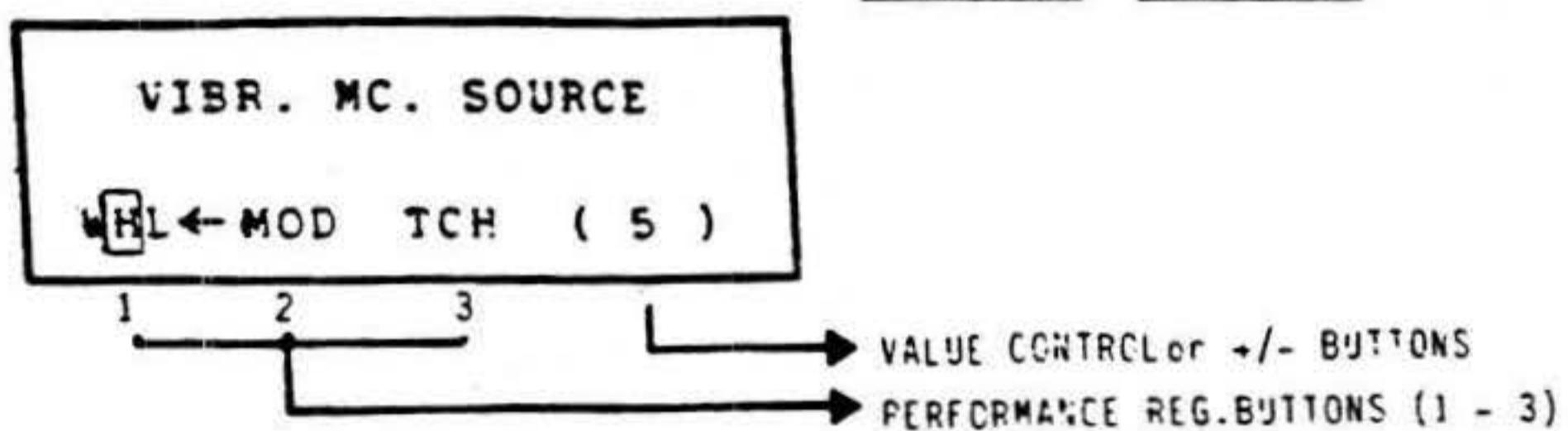
By pressing button N. 2, the **VIBRATO** effect is obtainable by means of the **MODULATION SWITCH** or **WHEEL**.

With button N. 3, the **VIBRATO** becomes effective with the **SECOND TOUCH** on the keyboard.

You can vary the **VIBRATO DEPTH** by using the **VALUE** control or the + or - buttons, while the **SPEED** will depend on the timbre chosen.

If, in the **PRESET** selected, Parameter 34 (VIBRATO M.C. SENS.) of the **EDIT** section is positioned at zero, no effect will be obtained. The **VIBRATO** function can be activated or deactivated at any point in the **MULTISPLIT** by means of Parameter 16 (VIBRATO ON/OFF). To activate this effect when using a full un-split keyboard, Parameter 16 must be in the "ON" position for **SPLIT N. 1**.

This display is showing that you have chosen the **WHEEL** method of **VIBRATO MOD.** control and in this case the **DEPTH** has been set at a value of 5.

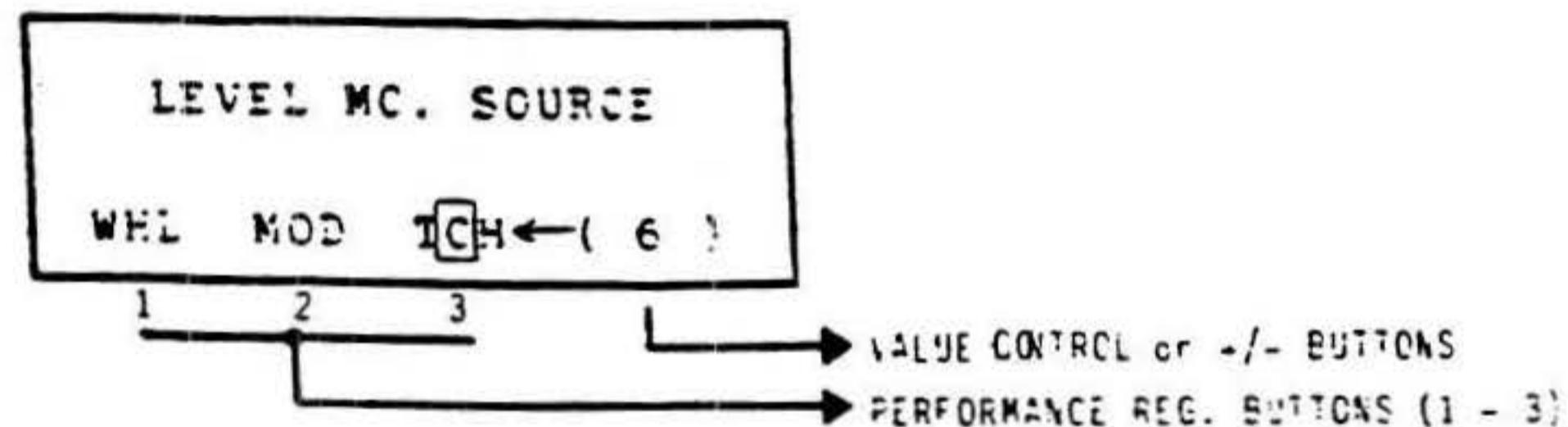


## 2 • LEVEL • 0-7

This parameter allows control of the **VOLUME** of **SOUND 1**, by means of the three methods described above. With the same first three buttons of the **PERFORMANCE REGISTRATIONS**, choose one of these methods, while adjusting the **DEPTH** with

the **VALUE** control or the + or - buttons. To obtain this effect, you should control, by means of Parameter 17 (LEVEL ON/OFF), that the **LEVEL ON** function is inserted in the **SPLIT** where you want to obtain this effect.

The **LEVEL** will be controlled by the **SECOND TOUCH** on the keyboard with this setting and the amount of control will be almost at maximum(6)

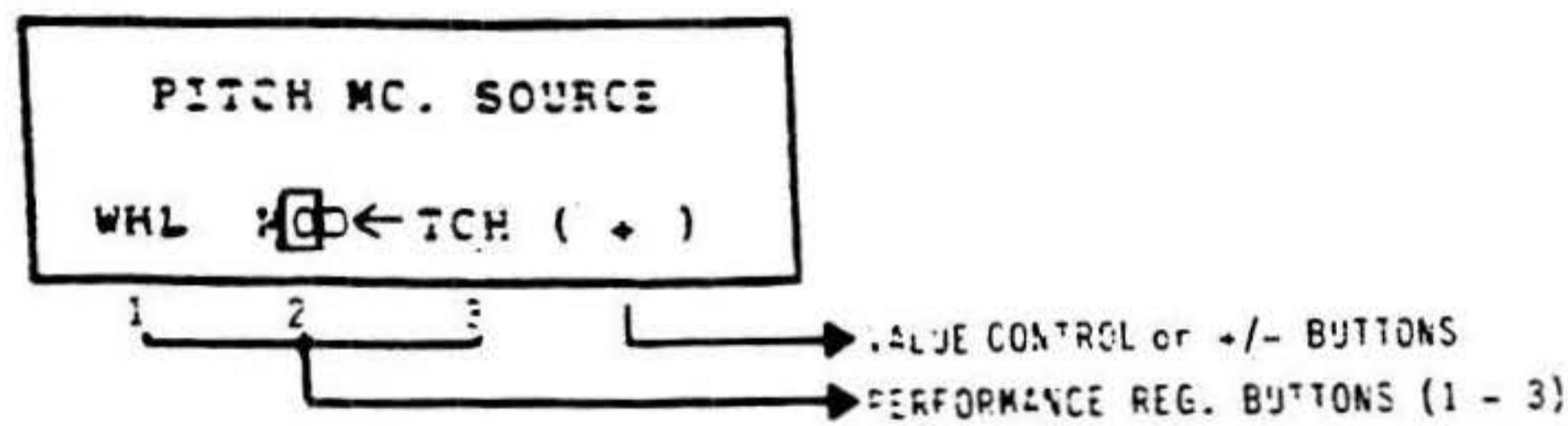


## 3 • PITCH BEND • + -

The **PITCH BEND** is a means of varying the tuning of the instrument. As already described, with one of the first three **PERFORMANCE REGISTRATION** buttons, choose by which way you

want to vary the **PITCH**, while with **VALUE**, you can decide in which way, + or - you will obtain the variation.

**PITCH MODULATION** will be obtained by the use of the **MODULATION SWITCH** with the setting shown on this display example, with a **PITCH** change in an upward direction. (Sharpening of the note)



## 4 • PORTAMENTO TIME • 0-7

**PORTAMENTO** makes possible the sliding of the **PITCH**, from the note or notes just played, to that of the one or ones played.

0 = No effect

1 = Minimum shift time

7 = Maximum shift time

This display example is showing a **PORTAMENTO TIME** setting of 4.

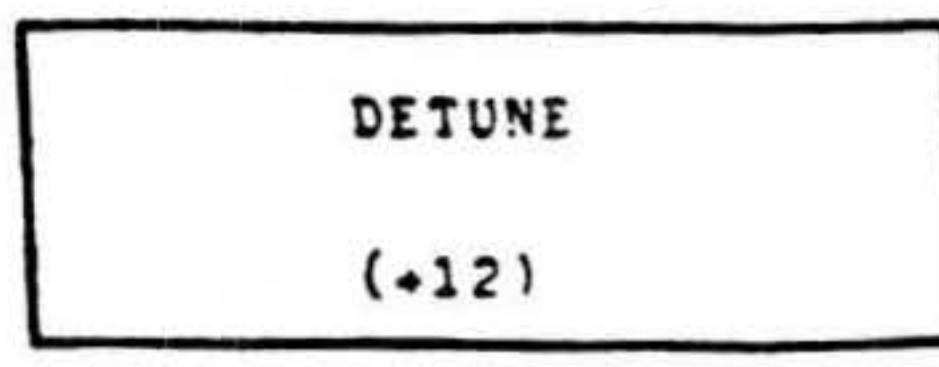


## 5 • DETUNE • -16 + 16

Enables the variation of the tuning of the sound generator DCG, to create beating effects with sounds coming from other instruments.

CONTROL      METHOD

On this display, a setting of 12 is showing that the detuning of the DCG has been set to + 12, this being 12/16ths of the max. sharpening of the DCG (+16).

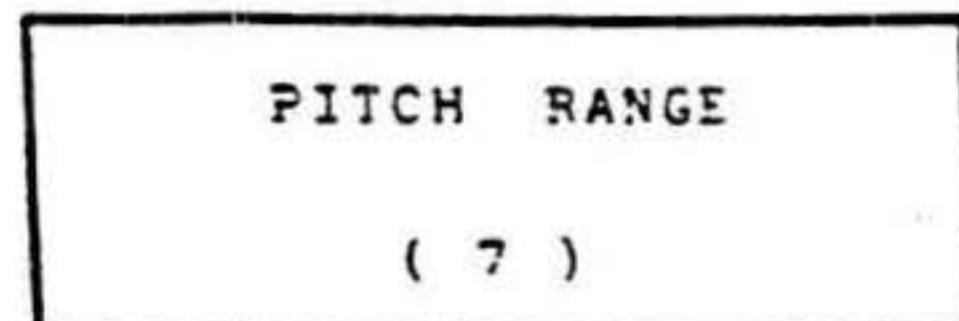


→ VALUE CONTROL or +/- BUTTONS

## 6 • PITCH RANGE • 0 - 12

Controls the number of semitones or the transposition of the tuning of the sound by means of the three controls described earlier (WHEEL, MODULATION SWITCH, SECOND TOUCH).

With this setting, 7, when using one of the modulation controls as chosen in Function Parameter 3 you will have a note change of seven semitones sharp or flat according to the +/- sign set in this parameter (N° 3).

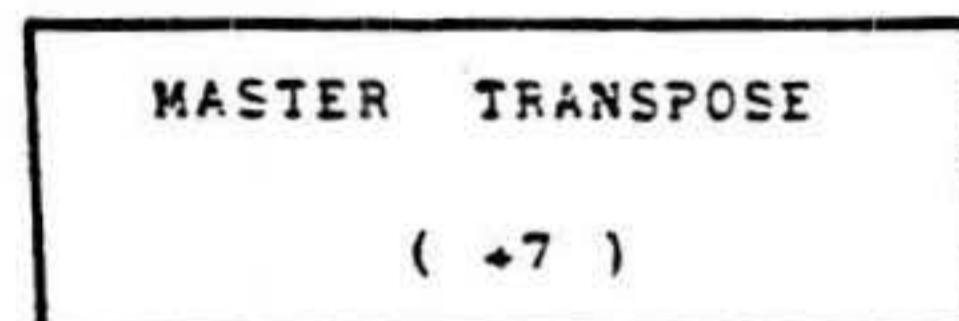


→ VALUE CONTROL or +/- BUTTONS

## 7 • MASTER TRANSPOSE (SEMITONES) • -12 + 12

This changes the tuning of the keyboard by a number of semitones according to the value of the parameter.

The + 7 setting shown in this display example is indicating that the pitch of the keyboard has been sharpened by seven semitones (i.e. C will have been sharpened to the G above.)

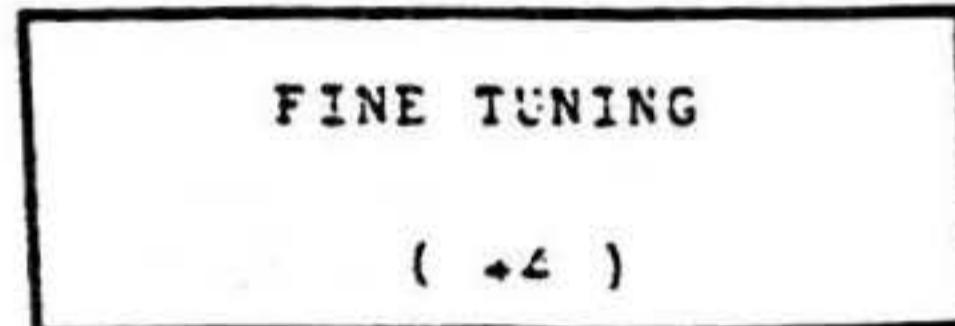


→ VALUE CONTROL or +/- BUTTONS

## 3 • FINE TUNING • -16 + 16

Varies the tuning of the keyboard with a unit change of 1/16 of a semitone.

In this case, the tuning of the entire keyboard has been sharpened by a 1/4 of a tone (+ 16 would have indicated a rise in the pitch of one complete semitone. - i.e. F would become the F# above)



→ VALUE CONTROL or +/- BUTTONS

## 9 • ARABIAN SCALE • Off - Edit - On

OFF = Chromatic Scale

EDIT = Arabian scale, which becomes available on exit from the FUNCTION mode, in place of the PERFORMANCE REGISTRATIONS.

ON = Allows you to memorize the last chosen Arabian scale and gives immediate use of the PERFORMANCE REGISTRATIONS. By means of the sophisticated technology used in this instrument, the tuning of each of the twelve notes in the musical scale is possible, thereby permitting the forming of every kind of Arabian scale.

The procedure to use, is as follows:

1 - Press FUNCTION and select parameter N. 9

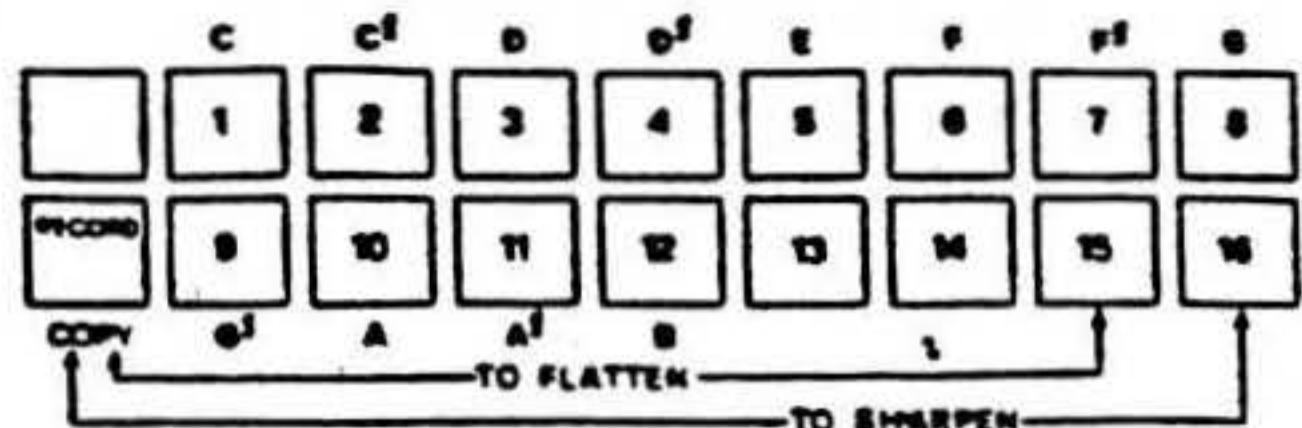
2 - Now bring VALUE to the EDIT position by means of the + button.

3 - Leave the Function mode using the INTRNL or CARTR. button. At this point the first twelve numbers of the PERFORMANCE REGISTRATIONS work as selectors to switch the twelve normal semi-tones to semi-tones used for Arabian music.

4 - Look at Fig. 2 and you will see that each of the first twelve numbers corresponds to a given note. Referring to this diagram just press one or more of the first twelve numbers and you will obtain the lowering of the pitch of the corresponding note, or notes, by a quarter of a tone (Arabian scale). Pressing again, one of the buttons already pressed, will restore this note to the chromatic scale. The tuning of any note in the Arabian scale can be fine tuned by means of the buttons 15 - 16 and RECORD.

Pressing the two buttons RECORD and 16 simultaneously with the relative note on the keyboard, will sharpen the note by a quarter of a tone. Likewise, the result of pressing RECORD and 15 at the same time as the relative note on the keyboard, will be that of a flattening of a quarter of a tone on this note.

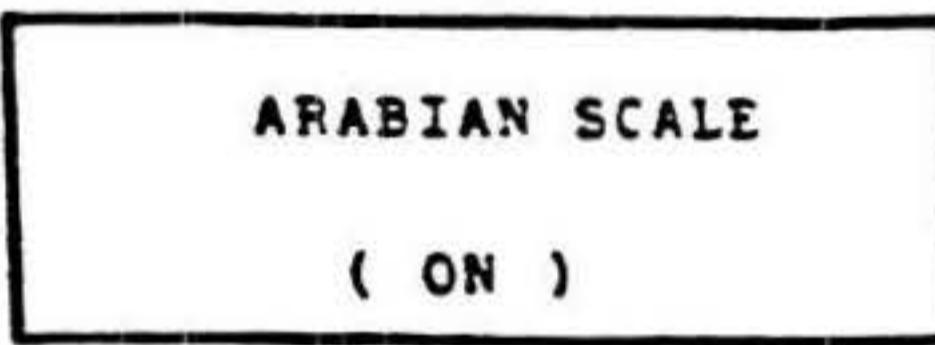
FIG. 2 ARABIAN SCALE NOTE LOCATION



If you want to set only one type of Arabian scale on the keyboard, change the value of PARAMETER 9 bringing it to the ON position and come out of the FUNCT. condition. PARAMETER 9 on the OFF position restores the CHROMATIC SCALE.

CONTROL METHOD

This simply indicates that the ARABIAN SCALE has been turned ON. Pressing - NO will change to EDIT and pressing again will give OFF.

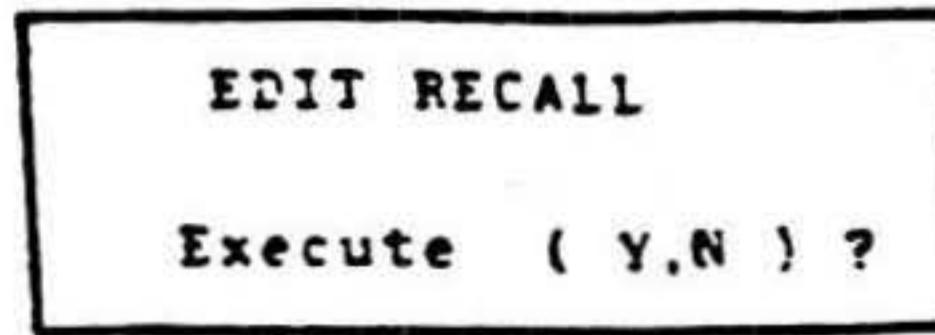


VALUE CONTROL or +/- BUTTONS

## 10 • EDIT RECALL • Yes - No

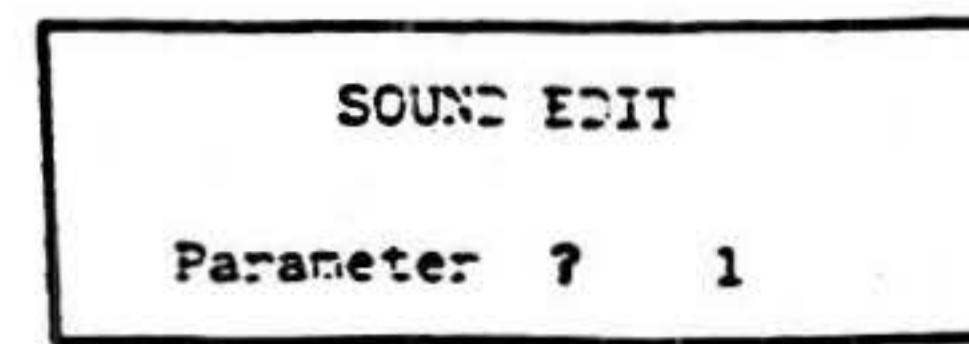
This function gives the possibility of recalling the previous sound that was formed or modified. Pressing the YES key, will return you to the previous sound, and the ER 33 will go automatically into the EDIT function. Pressing NO, will permit you to leave the FUNCTION condition. This particular feature will only be activated after coming out of the EDIT function.

When you select 'PARAMETER N° 10, you will call up this display. Just select YES or NO with the appropriate buttons or VALUE control: then if you press NO, you will come out of the Function Parameter mode and the last Preset in use will be displayed, or if you press YES then you will see the following display:-



VALUE CONTROL or Y/N BUTTONS

You must now press the number of the FUNCTION PARAMETER that you want to modify using the PRESET SELECTOR key pad numbers and then press ENTER.



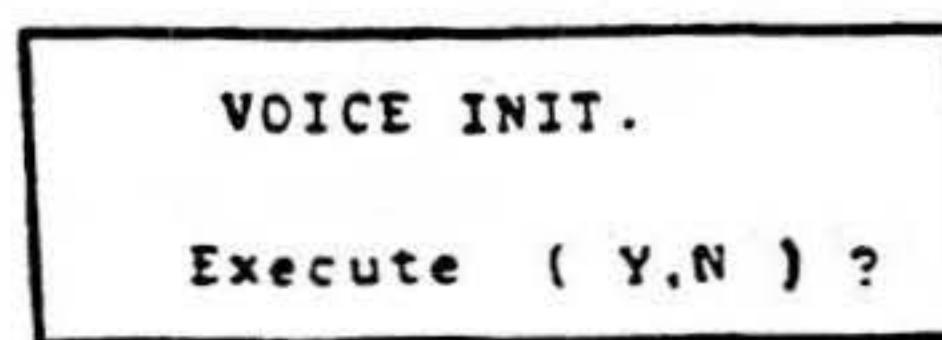
PRESET SELECTOR N°'s then ENTER

A basic sound on which to form a new voice will be automatically prepared by this function.

Pressing YES, the ER 33 will move automatically into the EDIT function, while NO, will permit you to leave the FUNCTION mode automatically.

When you enter FUNCTION PARAMETER N° 11, this message will be shown on the display. The pressing of the YES or NO keys will either permit you to continue with the editing process (in which case the above display will appear) or to come out of the Function mode).

CONTROL    METHOD



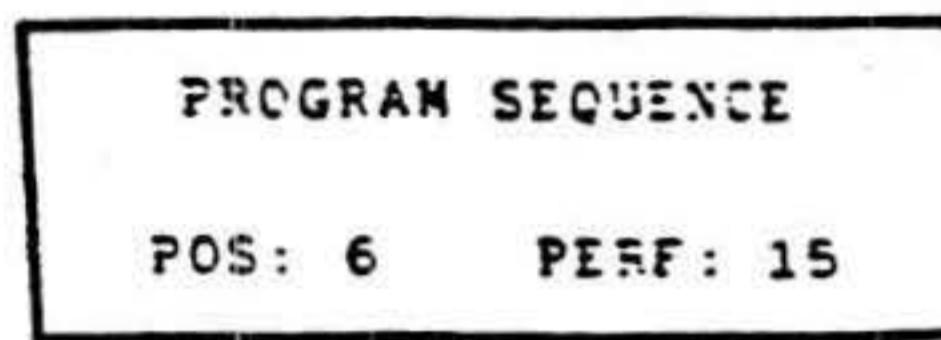
VALUE CONTROL or Y/N BUTTONS

## 12 • PROGRAM SEQUENCE RECORDER

With this parameter, you can write a sequence of a series of PERFORMANCE REGISTRATIONS and, by means of the MP 7 pedal, call them up, one after the other. After having selected

this parameter, press the PERFORMANCE REGISTRATION buttons in the order that you want to memorize them. To end this sequence, press the RECORD button. To verify the memorized sequence, use the + and - buttons.

This display is showing that in position 6 in the PROGRAM SEQUENCE you will find PERFORMANCE REGISTRATION N° 15. On selecting this Function Parameter, the display will show position 1 and you can then decide the performance sequence by just pressing the PERFORMANCE REGISTRATION N°'s up to a maximum of 32 positions.



PERFORMANCE REG. BUTTONS

If at a certain point when writing the sequence with let's say, Internal Perf. Registrations, you want to include some from the Cartridge; just leave free these positions in the sequence by entering any number at chance (1 - 16) to ensure the automatic advancement of the sequence position N°'s and continue writing the Internal Performance Registration N°'s into the positions required, then go back and fill in the numbers left free for the Performance Registrations to be taken from the Cartridge.

The procedure for this is as follows:-

Having memorized all the Internal Performance Registrations into the positions required ;

1. Press CARTRIDGE twice (this will then light up)
2. Press FUNCTION.
3. Press ENTER.
4. Bring the sequence position number to that required for the insertion of the first Cartridge Performance Registration with the + YES button.
5. Press the PERFORMANCE REGISTRATION number that is to be transferred - (1 - 16), and this Cartridge Performance will be inserted into the chosen position in the sequence.
6. Continue the advancement process with the + YES button and repeat the insertions by means of the PERFORMANCE REGISTRATION N°'s required into the position numbers left free earlier.

If you happen to have started the sequence writing with Performances from the Cartridge and want to insert some of the Internal Performances, just read INTERNAL in place of CARTRIDGE in Step 1 above, and proceed in the same manner in the remaining five steps. In this case you will be inserting Internal Performances into the positions left for this purpose.

Even though a maximum of 32 positions can be written, the sequence can be ended at any point by pressing RECORD.

To verify the memorized sequence, use the + YES and - NO buttons to scan the sequence.

## SPLIT & MIDI EDIT

MULTISPLIT is a very important function which makes the ER 33 a highly professional instrument. By means of the parameters 13-14-15-16-17-18 and 19, which we will describe further ahead, it is possible to prepare all the functions relating to MULTISPLIT. The first eight buttons of the PERFORMANCE REGISTRATIONS are for selection of the eight SPLITS.

### 13 • SPLIT POINTS • C1 - C6

Establish the dividing point in the keyboard for each of the eight SPLITS. For the most appropriate use, always start from SPLIT N. 1 and then prepare the others.

With the eight keys of the PERFORMANCE REGISTRATIONS (from 1 to 8), select the number of SPLITS, while with the VALUE control or + and - buttons establish at which note the division must be made.

N.B. - It is not possible to have a division point lower than the previous SPLIT.

To have a lower number of SPLITS, it is possible to cancel any SPLIT by means of the MULTISPLIT ON/OFF button, bearing in mind that the MIDI reception of that SPLIT is always activated. Cancelling one or more SPLITS you will extend the one following at the low end. (Only if the ER 33 receives on all channels and is therefore reset to OMNI ON).

By cancelling, for example, SPLITS N. 3 and N. 4, the extension of SPLIT N. 5 will no longer be from C 4 to F 4 but from C 3 to F 4.

To select the timbres to be assigned to MULTISPLIT, leave the FUNCTION mode, press MULTISPLIT, and by means of the two SCROLL I and SCROLL II buttons you can look at the eight SPLITS on the display, and modify them, using the normal procedure.

N.B. The MIDI channel assigned to SPLIT N. 1 also corresponds to that of the whole keyboard.

FIG. 3 EXAMPLE OF KEYBOARD SPLITS



Split N. 1 = C 1 - B 1

Split N. 2 = C 2 - B 2

Split N. 3 = C 3 - A 3

Split N. 4 = A # 3 - C 4

Split N. 5 = C # 4 - F 4

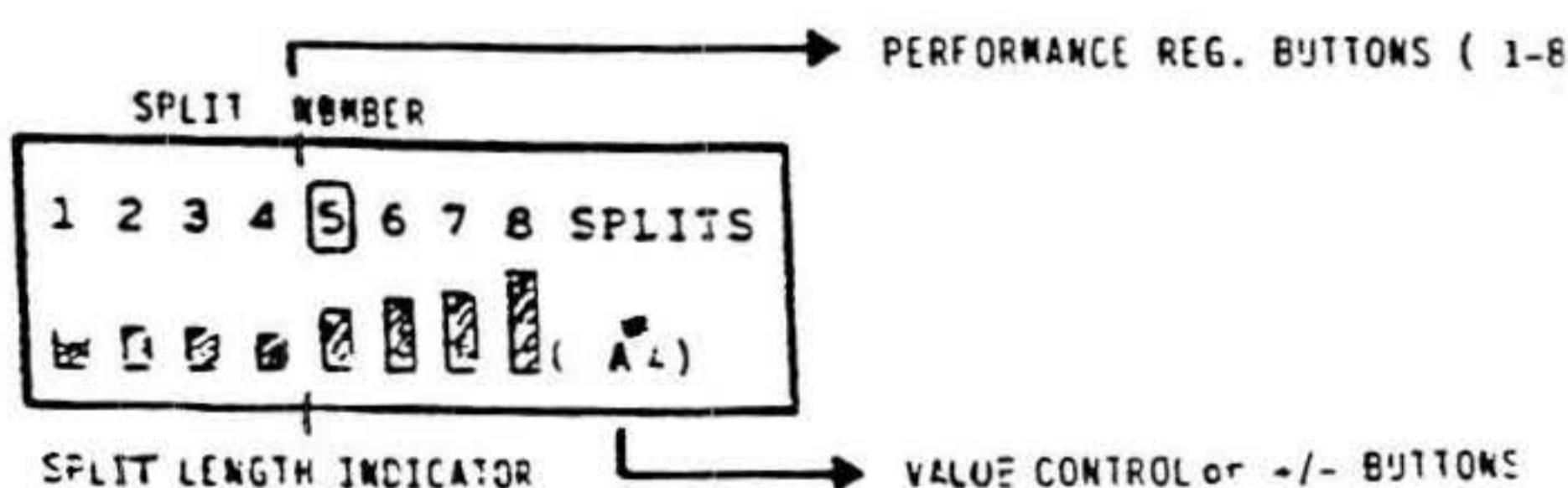
Split N. 6 = F # 4 - B 4

Split N. 7 = C 5 - F 5

Split N. 8 = F # 5 - C 6

CONTROL      METHOD

In this display example, SPLIT N° 5 (which at present is made at A # 4) is ready to be modified. ( Indicated by the flashing 5 )



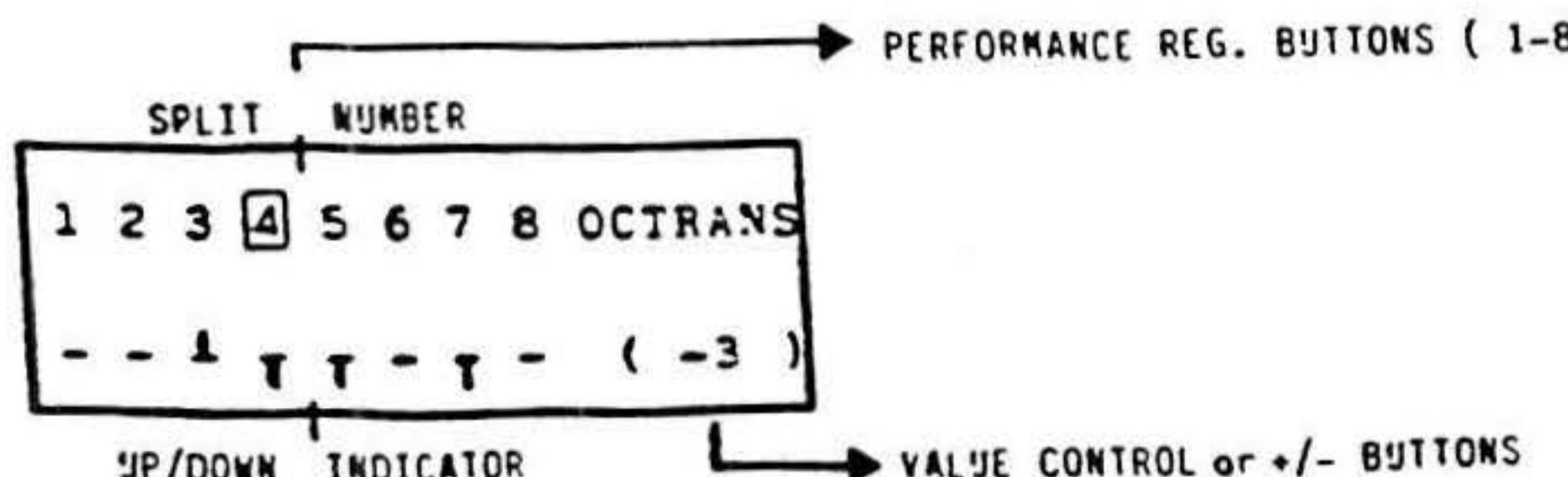
(e.g. C1 - D2#)

For MIDI reception, when in the MULTISPLIT mode, the length of the SPLIT no longer counts, because for every separate MIDI channel or SPLIT available you have the complete extension of the keyboard at your disposal. Therefore if you have a sequencer available, it is possible to record eight separate tracks with eight different sounds, with the total extension of the keyboard available for each track. (Taking into account the polyphonic capability of the instrument.)

### 14 • OCTAVE • -6+6

Through this parameter it becomes possible to arrange for a different working octave to that of the timbres chosen in the MULTISPLIT. Always make sure that the OCTAVE is neither too low nor too high.

This display is used to show the user the octave situation of each split. In the example, SPLIT N° 4 (flashing) has been transposed down by 3 octaves as indicated by the sign under N° 3 and the octave number on the right of the display.

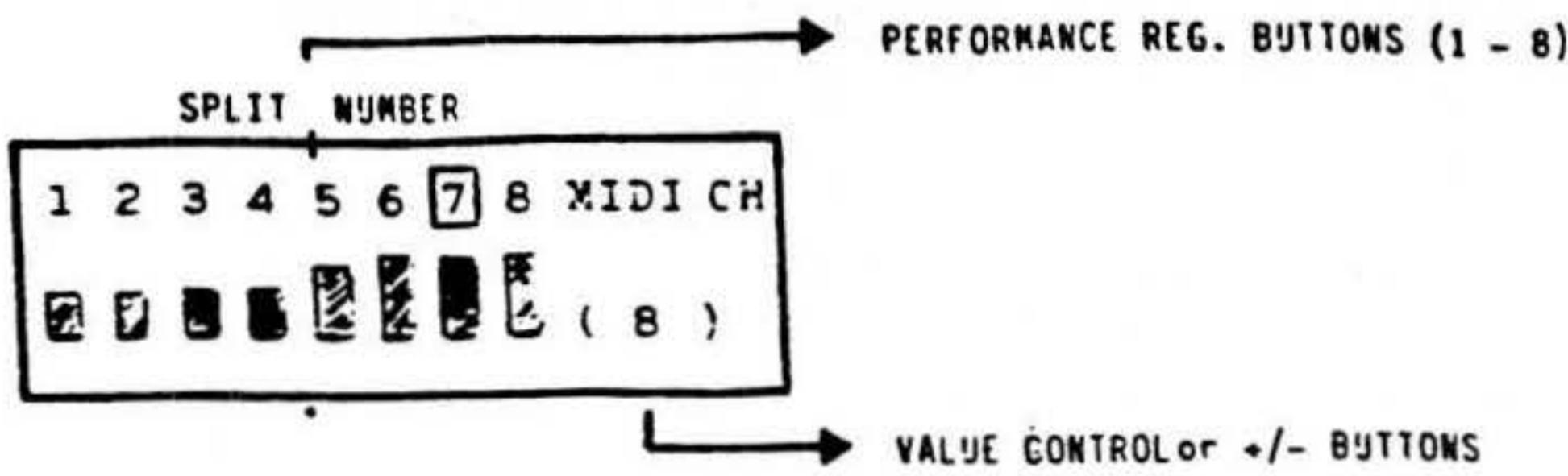


## 15 • MIDI CHANNEL • 1-16

Selects the MIDI channel of each SPLIT.  
In this way, it becomes possible to use the same or different  
MIDI channels for each SPLIT.

The example shown is indicating that  
SPLIT N° 7 has been assigned to MIDI  
CHANNEL N° 8, if you want to change  
the channel N°, you should use the  
VALUE CONTROL or +/- buttons to go up  
or down as required. The sign under  
each number is longer or shorter  
according to the Midi channel number.

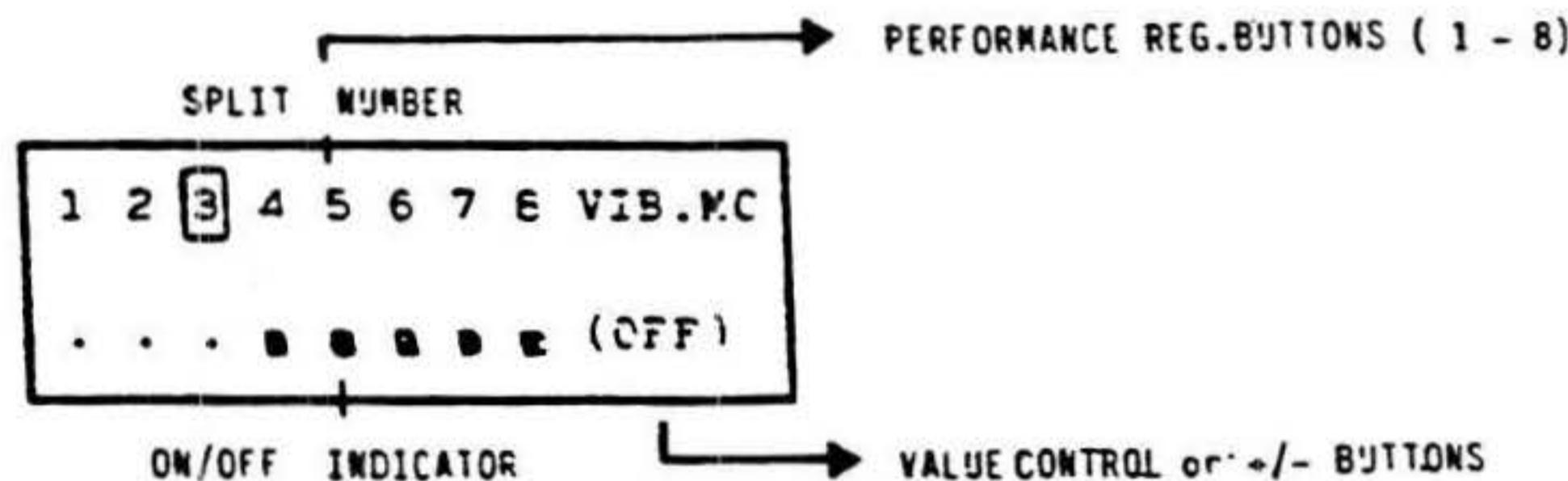
## CONTROL METHOD



## 16 • VIBRATO MC ON/OFF • ON/OFF

This is the enable (ON) and disable (OFF) of the MODULATION  
CONTROL in the various SPLIT points.

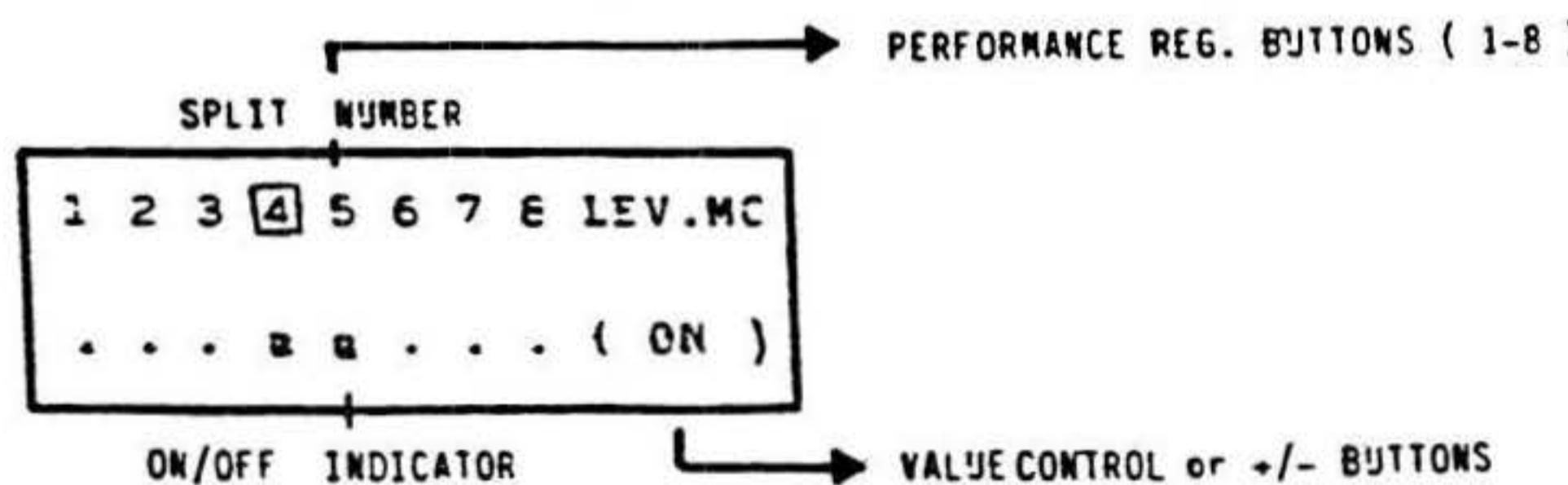
This example is showing that SPLIT N°  
3 is not at present controllable by the  
VIBRATO MOD. control as seen by the  
indication OFF on the right of the dis-  
play. When you change this condition to  
ON, the indicator below the respective  
number will change from a dot to a square  
sign, as shown on splits 4 - 8.



## 17 • LEVEL MC ON/OFF • ON/OFF

Enables and disables the working of the LEVEL MC in the  
various SPLIT points. It is not possible to apply this feature to  
more than two points of the SPLIT.

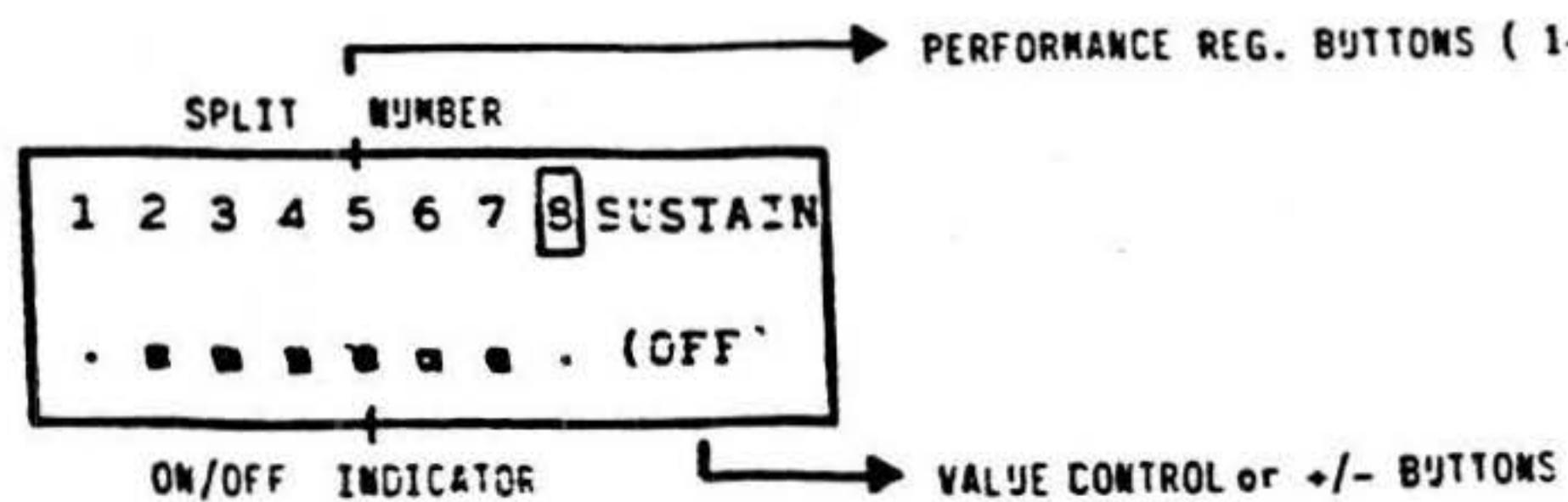
The LEVEL MC control is shown to be  
active on SPLITS 4 - 5 (square signs  
under these numbers) in this example,  
and that SPLIT N° 4 has been called  
up by means of PERF. REG. button N° 4  
(flashing 4 in top row of Split N°'s)  
and is ready to be deactivated if need  
be, by the - OFF button or VALUE CONTROL



## 18 • PEDAL SUSTAIN CNT. ON/OFF • ON/OFF

PEDAL SUSTAIN in the various SPLIT points is switched On or  
Off with this facility.

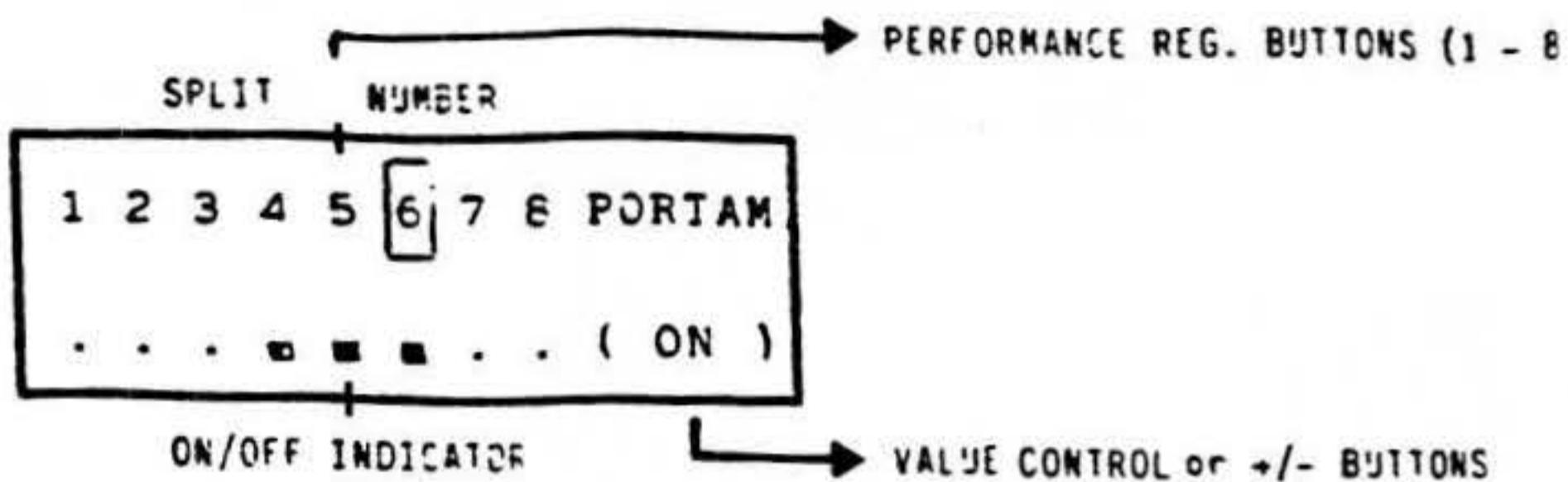
This display is telling you that PEDAL  
SUSTAIN is present on the SPLITS (2 - 7)  
and that SPLIT N° 8 is ready to be  
given PEDAL SUSTAIN if required by using  
the VALUE CONTROL or + ON button.



## 19 • PORTAMENTO ON/OFF • ON/OFF

PORTAMENTO on/off facility in each for the SPLIT points.

CONTROL      METHOD



Portamento is active on SPLITS 4, 5 and 6 as will be seen from the display in this case, and N° 6 has been selected (flashing) to be changed.

## MIDI FUNCTION ON/OFF

## 20 • OMNI MODE • ON/OFF

Selects the operating system of the MIDI reception.  
 ON = Receives on all channels  
 OFF = Receives on one channel only, or more than one in the case of MULTISPLIT.

## 21 • MC TRANSMIT-RECEIVE • ON/OFF

Enables the transmission and reception of the modulation parameters (MODULATION CONTROL)  
 ON = Receives and transmits  
 OFF = Disabled

## 22 • SYSTEM EXCLUSIVE • ON/OFF

ON = Enables the System Exclusive transmission.  
 OFF = Disactivates the transmission.

## 23 • PROGRAM CHANGE • ON/OFF

ON = Enables the transmission and reception of the PRESET number. PEDAL VOLUME and PEDAL SUSTAIN.  
 OFF = Disactivated.

## DCG (DIGITAL SOUND GENERATOR)

Before going on to the actual editing of the sounds, (EDIT), we feel that it would be a good idea to explain, very briefly, the sound generation system of this instrument, that is the DCG (Digital Control Generator).

The DCG is a sound generator using digital techniques and controlled by parameters which make possible the variation of the harmonic sound spectrum.

All existing sounds are composed of harmonics which correspond to mathematic equations (Fourier's analysis).

Modifying the volume, the phase and the frequency of each harmonic, you can go from a pure sound, like that of a flute, to a rich harmonic sound, like brass or violins.

The objective of the DCG is that of being able to modify the harmonic content of the waveform generated with the use of various parameters.

The DCG is composed of two groups, each containing four oscillators (SOUND 1 - SOUND 2):

OSC. 1 +	OSC. 5 +
OSC. 2 +	OSC. 6 +
OSC. 3 +	OSC. 7 +
OSC. 4 +	OSC. 8 +

= SOUND 1      = SOUND 2

The further sum of these two SOUNDS make up the final PRESET:

SOUND 1 +  
 SOUND 2 +

= PRESET

Each oscillator generates a basic waveform called a SINEWAVE.

For each oscillator it is possible to control:

RELATIVE FREQUENCY = Sound Pitch

DETUNE      = Tuning difference from one oscillator to the other

ENVELOPE      = Attack, Decay, Sustain, Release

LEVEL      = Volume

SCALING      = Possibility to modify the Envelope and Level throughout the keyboard

KEY VELOCITY SENSITIVITY = Dynamics

The four oscillators can be connected together by different means. According to whether they are just simply summed together or mutually modulated, the parameter control will give different effects. Summing, for example, two oscillators of the same frequency and amplitude, you will obtain the same sound, but with double the volume. By modulating one oscillator with another, you will get a completely different timbre with a richer harmonic content. With combinations of these two basic means of connection, you will have an infinite number of sounds available.

Each SOUND can have eight different combinations of oscillators, as shown by the table on the next page.

OSCILLATOR COMBINATION

## “EDIT” PRESET PARAMETERS

This function allows you to modify a sound already programmed, thereby making the creation of new ones possible.

To change the parameters of a sound, you must press the EDIT key and then select the number of the parameter that you intend to modify.

The parameters from 1-12 refer to the eight oscillators, while the numbers from 21-38 correspond to SOUND 1 and SOUND 2. By means of the buttons from 1 to 8 of the PERFORMANCE REGISTRATIONS, select one of the eight oscillators to be modified (if the selected parameters are between 1-12 inclusive). At this point the name of the parameter chosen will be shown on the

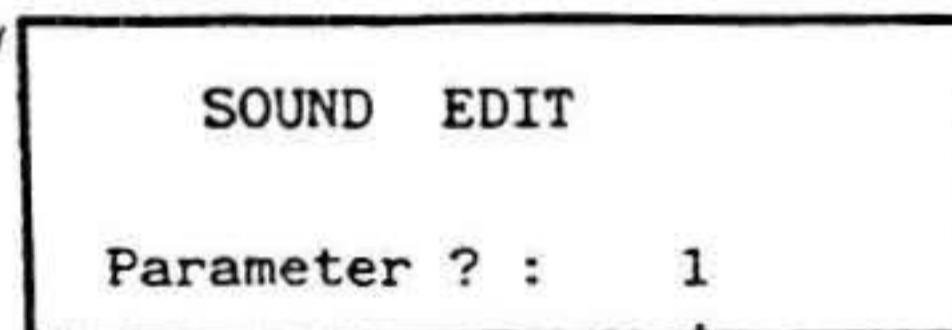
It should be noted that when working with the EDIT PARAMETERS from 1 - 12, the lower line of PERFORMANCE REGISTRATION buttons 9 - 16, can be used to cancel the 8 oscillators. Button N°9 for OSCILLATOR N°1, Button N°10 for OSCILLATOR N°2 and so on. The oscillators switched off will be shown by the absence of their numbers in the top line of the displays of Parameters 1 - 12 and when you have cancelled an oscillator while working on one particular parameter, this will of course show off on all the displays relative to Parameters 1 - 12.

display, along with the situation of the eight oscillators and, flashing, which of the eight that is ready to be modified. Under each oscillator, some graphic designs will always be shown, in order to keep all the eight values under control at the same time.

If the parameter to be modified refers to the SOUND (from 21 to 38), then the first two PERFORMANCE REGISTRATIONS buttons are used to select SOUND 1 or SOUND 2. Also in this case the one in operation will be seen to flash.

### CONTROL - METHOD

On pressing EDIT, the following display will show:-



→ PARAMETER SELECTOR then ENTER

You must now press the number of the EDIT PARAMETER that you want to modify, using the PARAMETER SELECTOR key pad, and then press ENTER.

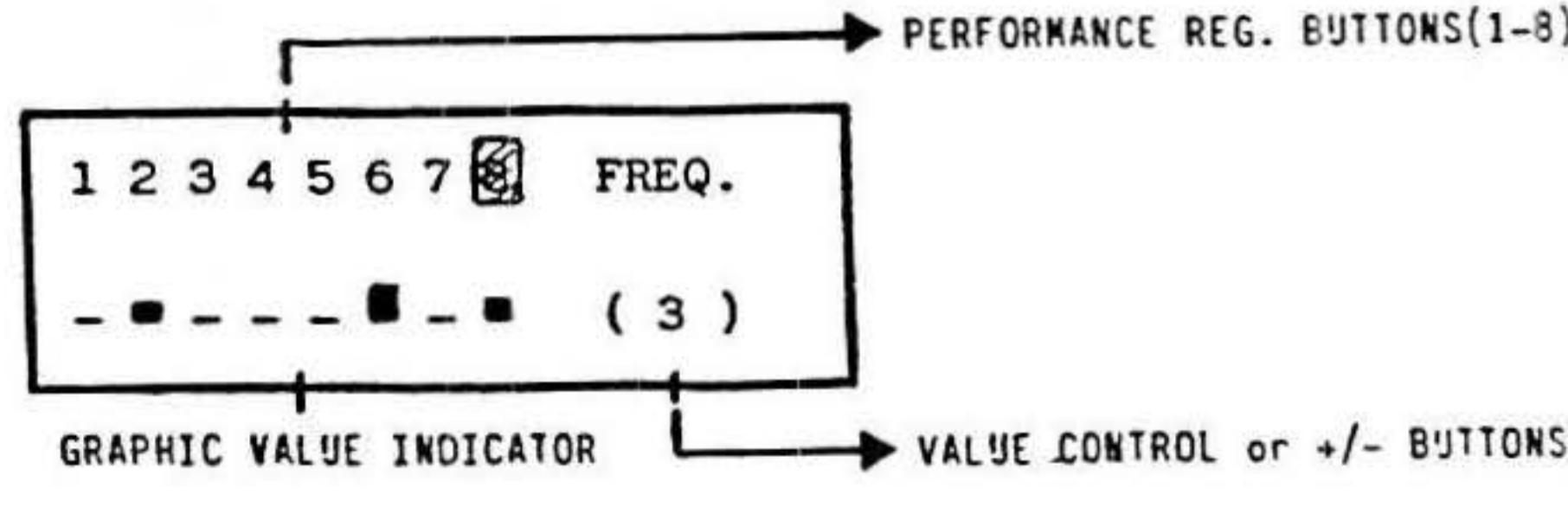
### OSCILLATOR CONTROL

#### 1 • RELATIVE FREQUENCY • 0,5-15

This parameter enables you to adjust the RELATIVE FREQUENCY (Pitch) of the oscillators by a multiple of between 0.5 and 15.

This means that, if for example, you modify a note of A=440 Hz by a multiple of 0.5, then the frequency will become 220 Hz (one octave lower). If by the same token you change this note by a factor of 2, then it will become 880 Hz (one octave higher than the standard pitch), and so on.

This display is showing that OSC. N°8 (flashing) has been set to 3, meaning, as explained above, that this oscillator will sound at a frequency three times higher than normal (for A=440, this means a frequency of 1320 Hz. N.B. - This is not 3 octaves higher, which would mean multiplying by a factor of 8 (for A=440, 3 octaves higher means a frequency of 3,520 Hz.)



## 2 • DETUNE • -3 +3

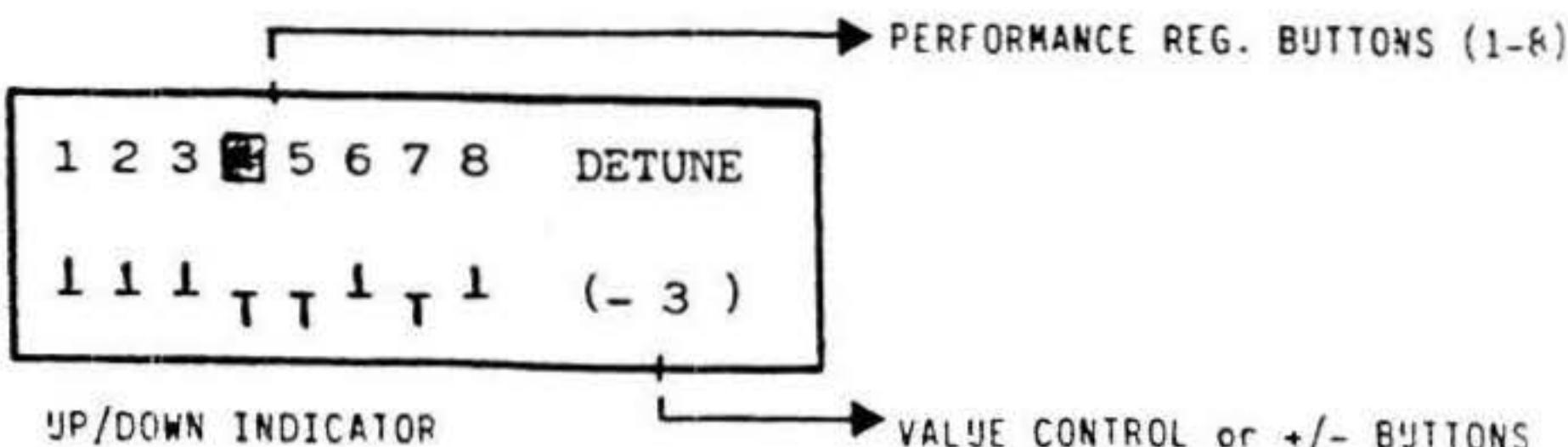
The oscillator frequency determined by the RELATIVE FREQUENCY control, can be very slightly retuned by means of this fine tuning control, to obtain some useful beating effects.

+3 Positive Detuning (sharp)

0 Relative Frequency

-3 Negative Detuning (flat)

The flashing N° 4 in this display example is indicating that OSC. N° 4, which at present is at a maximum detuning level of -3 as shown, is ready to be detuned differently as required. The detuning of each oscillator can be readily seen to be UP or DOWN by the signs under each oscillator number, on the bottom line.

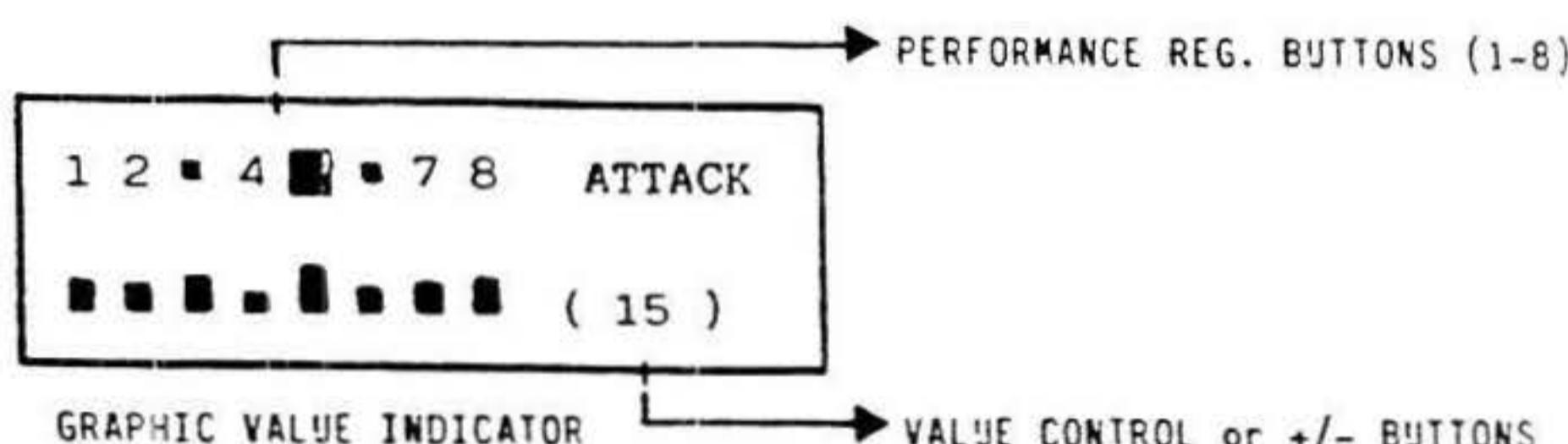


## 3 • ENVELOPE ATTACK RATE • 0-31

Varies the time, taken by the envelope profile, to go from 0 to its maximum level, after the key has been pressed.

0 = Minimum speed  
31 = Maximum speed

OSCILLATORS 3 and 6 are cancelled in this display, and N° 5 has its ENVELOPE ATTACK RATE set to 15, about halfway of its maximum attack rate, as shown by the sign under the number 5.



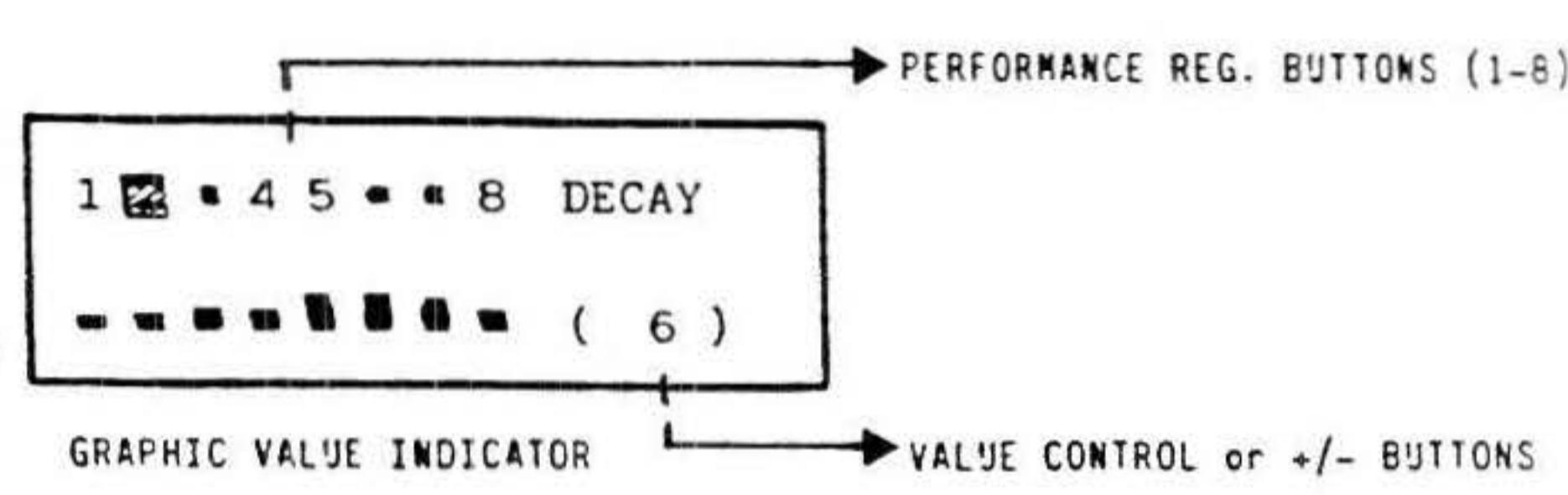
## 4 • ENVELOPE DECAY RATE • 0-31

Controls the time necessary for the envelope profile to pass from its maximum level to that of the SUSTAIN.

0 = Minimum speed  
31 = Maximum speed

The ENVELOPE DECAY RATE of OSC. N° 2 is set to 6 in this case, and can be modified as is shown by the flashing N° 2.

OSCILLATORS 3, 6 and 7 are shown to be switched off by the fact that their numbers do not appear on the top line of the display.



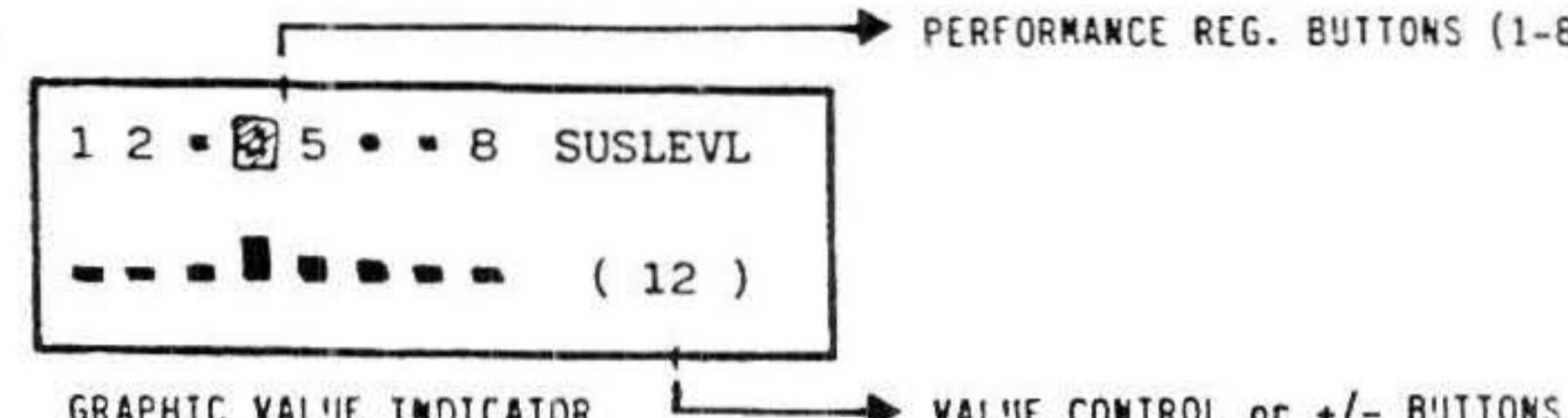
## 5 • ENVELOPE SUSTAIN LEVEL • 0-15

Determines the constant envelope level or volume at which the sound is maintained to complete the ATTACK and DECAY phases for the total time that the note key is kept pressed.

In such a case, though, where the SUSTAIN RATE value is not zero, then the SUSTAIN LEVEL creates some more complex transients of DECAY (pizzicato, etc.) indicating the breaking point between DECAY RATE and SUSTAIN RATE.

0 = Zero volume.  
15 = Maximum volume.

From this display you can see that OSC. N° 4 has an ENVELOPE SUSTAIN LEVEL of 12, as is shown by the number in brackets and also here you can see that OSCILLATORS 3, 6 and 7 have been cancelled.



## 6 • ENVELOPE SUSTAIN RATE • 0-31

The length of time taken by the envelope profile to travel from the SUSTAIN level to zero.  
 0 = Minimum speed  
 31 = Maximum speed

As indicated by the flashing N° 8, the number in brackets refers to the ENVELOPE SUSTAIN RATE setting of OSC. N° 8 which at present is at zero. This can be modified if required by the VALUE CONTROL or +/- BUTTONS as shown in the CONTROL METHOD column on the right of the display examples. This setting is also at zero for OSCILLATORS 3,4 and 5 as can be seen from the GRAPHIC VALUE INDICATOR on the bottom line of the display.

## 7 • RELEASE • 0-15

Establishes the time taken for the envelope profile to fall to zero, after the note key has been released.  
 0 = Minimum speed  
 15 = Maximum speed

Here you can see that the RELEASE on OSCILLATORS 4,5 and 6 is at zero, numbers 1,2,3 and 8 are at a setting of about halfway and that OSC. N° 7 (flashing) is at present at a maximum setting of 15.

## 8 • ENVEL. SCALING • 0-3

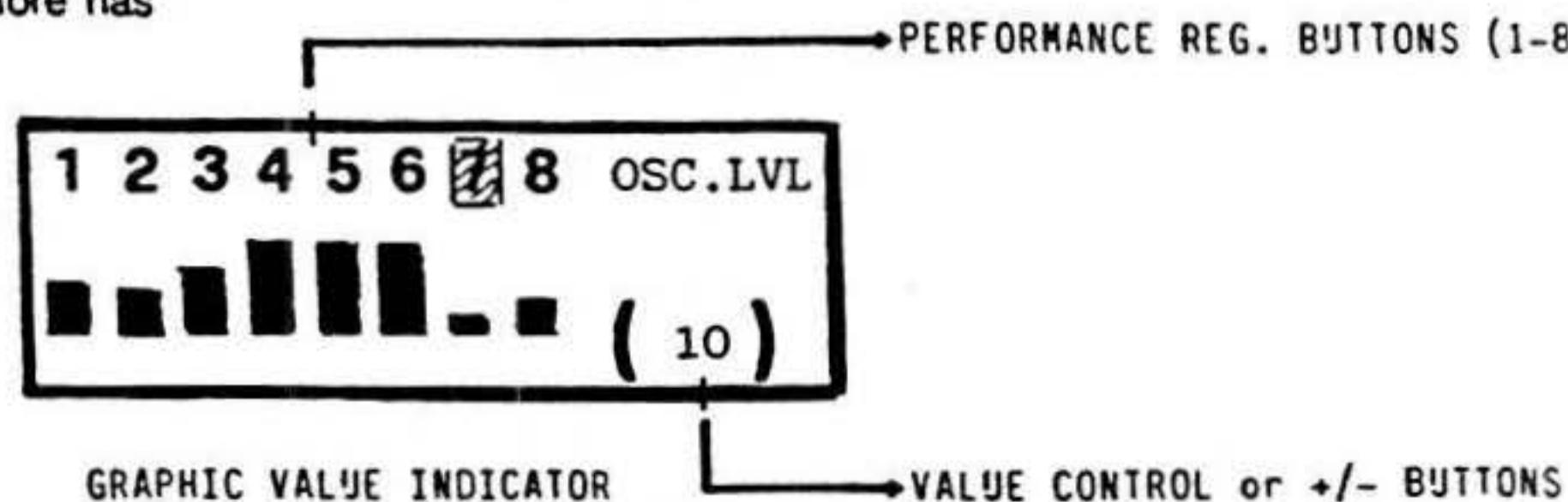
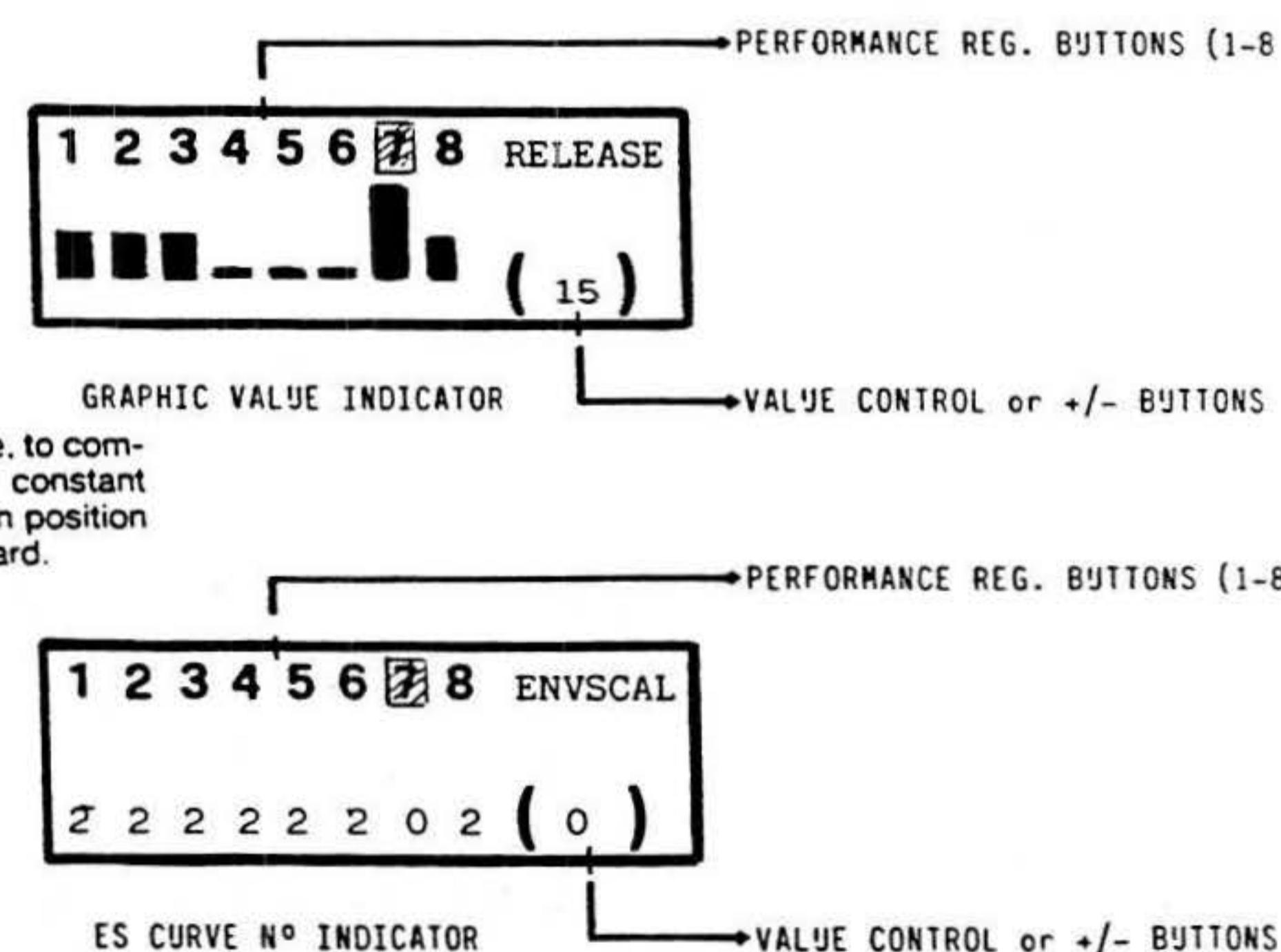
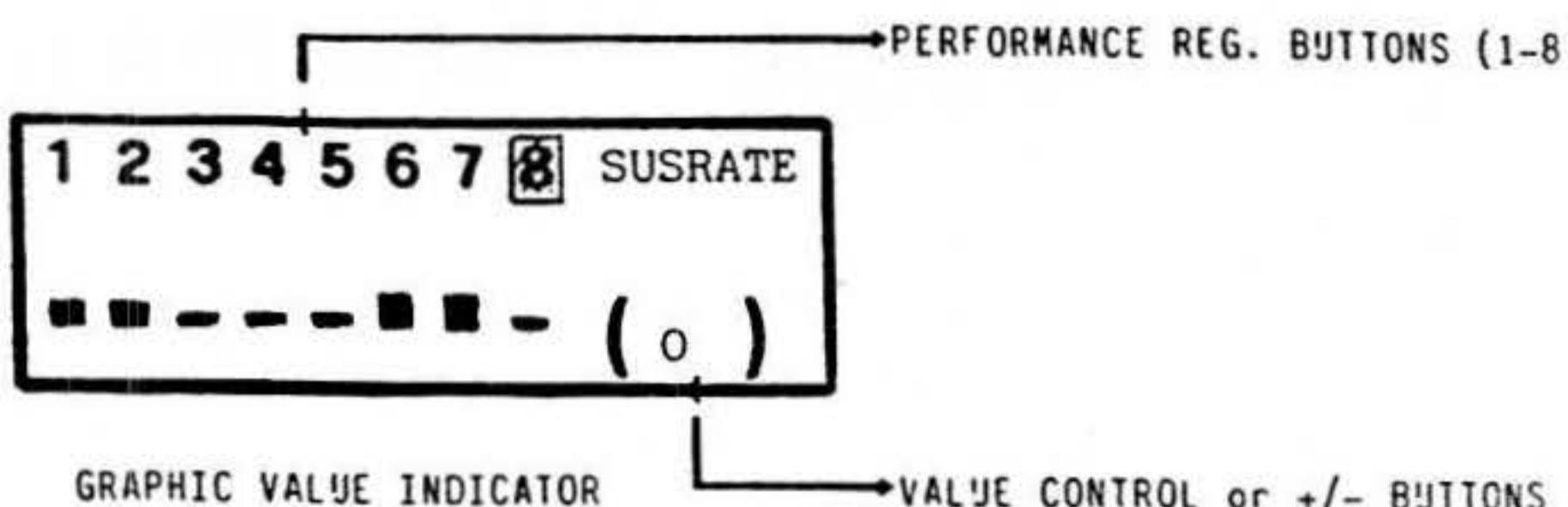
This parameter varies the time needed by the envelope to complete its curve. In position 0, this time will remain constant throughout the whole keyboard, on any key played. In position 1-2-3 the time will decrease as you play up the keyboard.

This display is showing the curve type setting of each oscillator, and in this case all oscillators are set to 2, except N° 7 (flashing) which at present has a zero setting and is ready to be modified if required.

## 9 • LEVEL • 0-127

Controls the output level of each oscillator and therefore has considerable influence on the sound character.

The relative LEVEL of each oscillator can be seen at a glance from the GRAPHIC VALUE INDICATOR in the bottom line of this display. The exact values can be read by calling up each oscillator n° and reading the setting indicated in brackets, as in the case of this example OSC. N° 7 has a LEVEL of 10.



## 10 • LEVEL SCALING SIGN. • - +

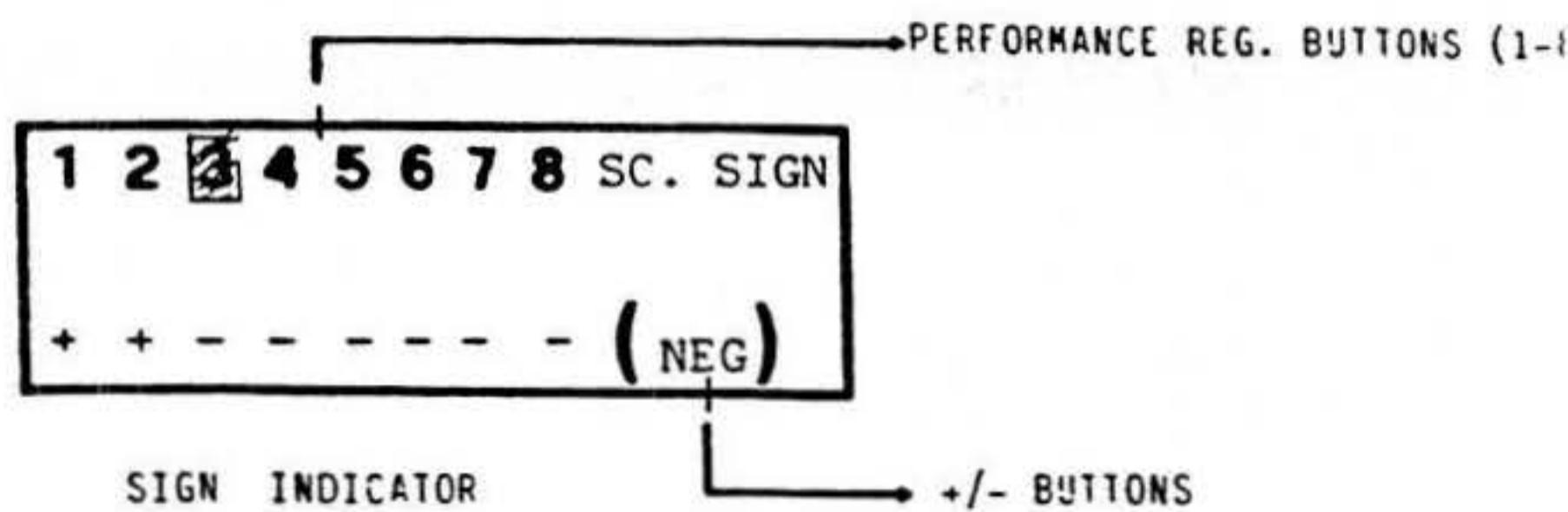
Selects the curve with which the oscillator level changes throughout the keyboard.

This display simply tells you whether the oscillator LEVEL SCALING curve is POS or NEG. OSCILLATORS 1 and 2 in this example are both positive, but all the others, as is N° 3 (flashing), are negative.

## 11 • LEVEL SCALING AMOUNT • 0 - 127

Decides the slope of the Scaling curve. At zero this corresponds to no variation at all, throughout the whole length of the keyboard. At 127 the maximum variation in the oscillator level is achieved, positive or negative, according to the LEVEL SCALING Sign.

The relative LEVEL SCALING AMOUNT setting can be seen from the length of the sign below each OSCILLATOR N° in this display, and the exact setting, as in this case for OSC. N° 1 (49), can be read by calling up each oscillator n° in turn and controlling the setting from the number in brackets.



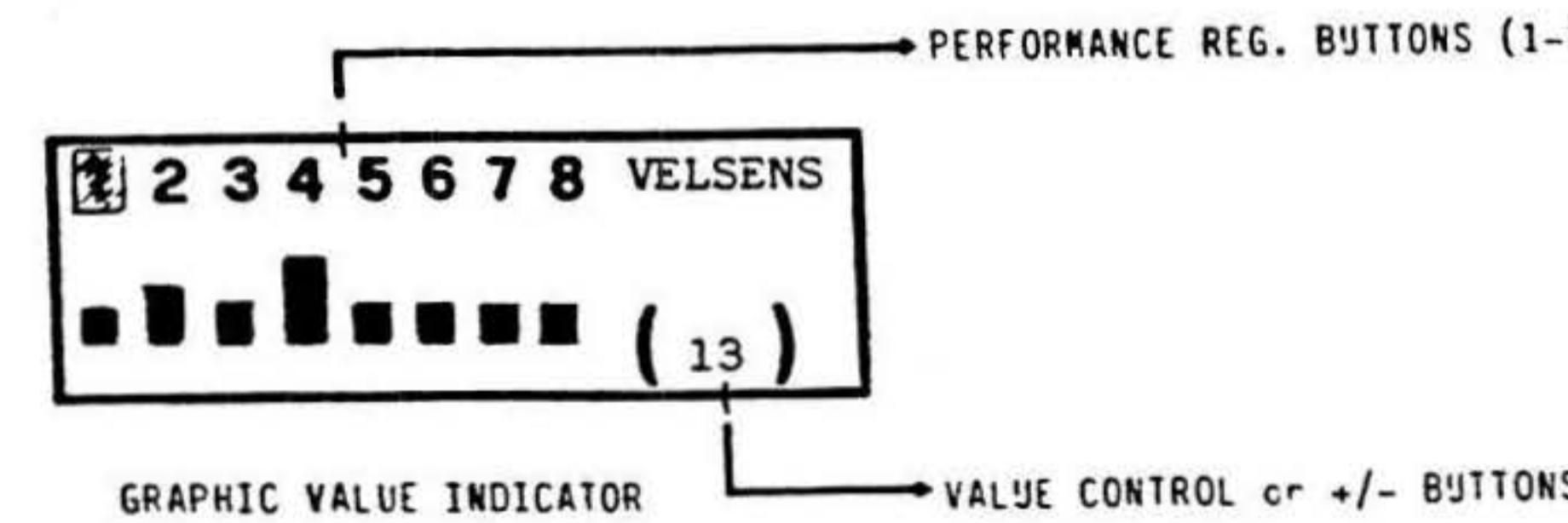
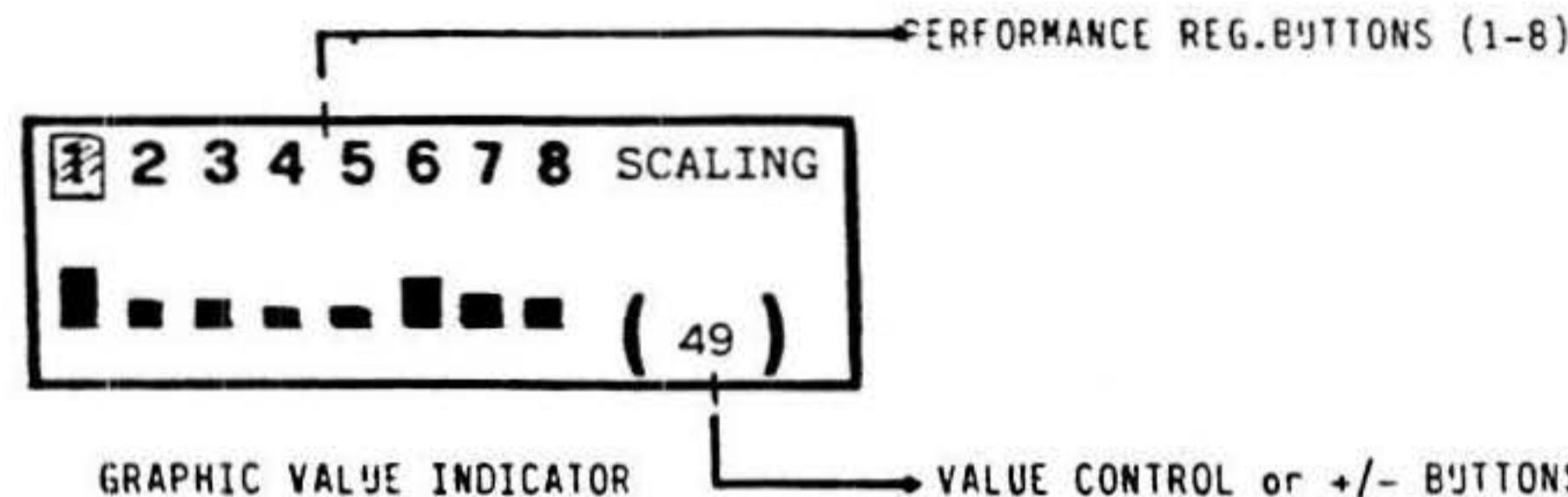
## 12 • KEY VELOCITY SENSITIVITY • 0 - 127

Allows the variation of the volume of each of the oscillators, in proportion to the touch with which you play the keyboard. By giving a certain value to the modulating oscillators, you will have a variation in the sound (timbre), while applying a specific value to a non modulating oscillator will accomplish a volume variation.

0 = No effect

127 = Max. sensitivity

As in all the other OSCILLATOR CONTROL Parameters except 2,8 and 10, the signs under each oscillator n° give an idea of the parameter setting. The exact setting will be seen from the number in brackets by calling up each oscillator n° using the PERFORMANCE REGISTRATION buttons from 1 - 8. In this example the setting for OSC. N° 1 (flashing) can be seen to be 13.



## SOUND CONTROLS

It should be noted that in each of the following parameters you will see 8 numbers on the top line of the displays as in the parameters 1 - 12, which as in these first twelve, indicate the 8 numbers of the oscillators which can be cancelled from the sound spectrum by means of the PERFORMANCE REGISTRATION buttons N°'s 9 - 16. In each of the display examples you will see that OSCILLATORS 3 and 5 have been cancelled.

### 21 • OSCILLATOR COMBINATION • 1-8

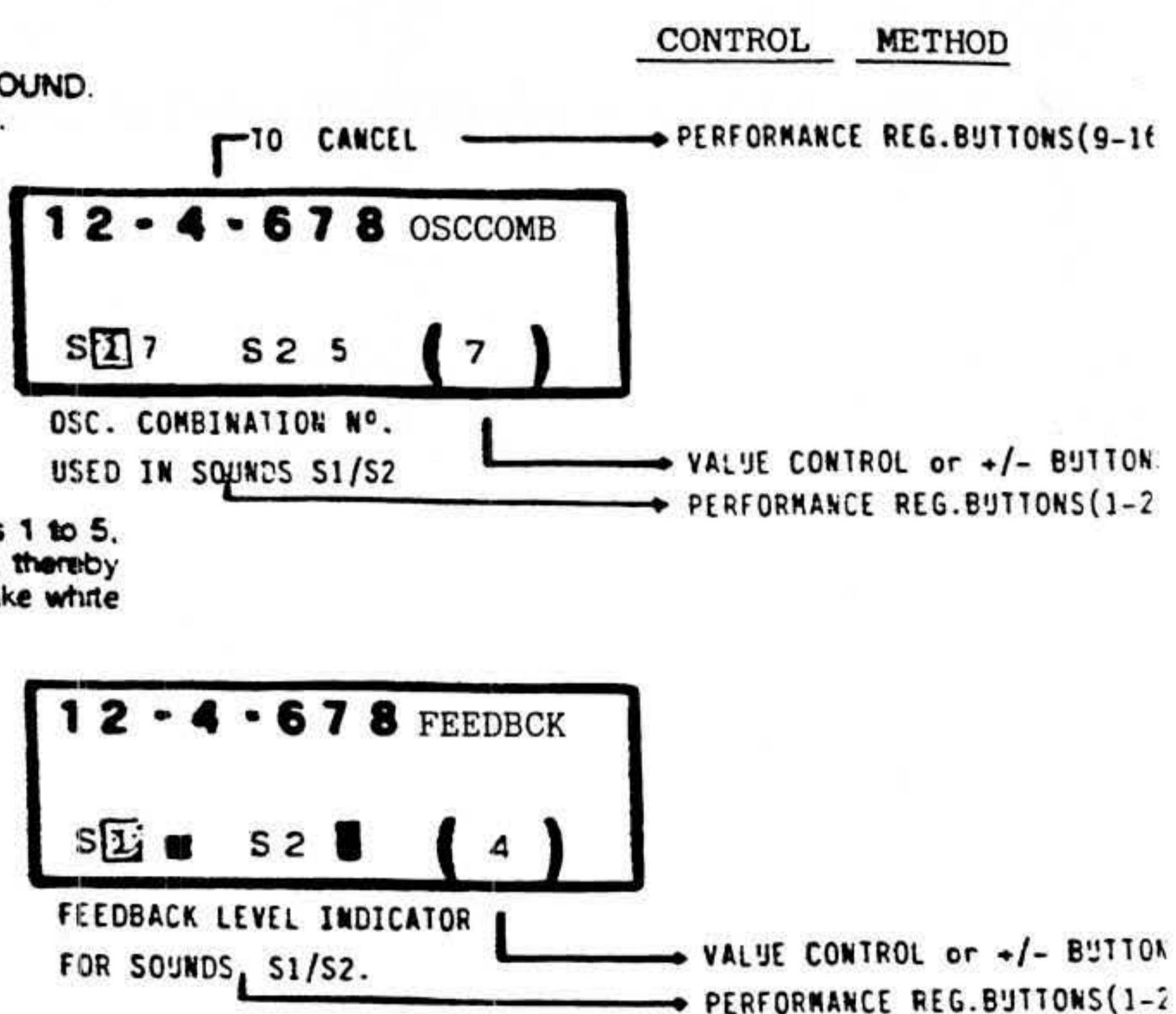
Selects one of the eight forms of the oscillators for each SOUND. See the appropriate table. OSCILLATOR COMBINATION.

This display example is telling you that you have selected the oscillator combination N° 7 for use on SOUND 1 (flashing) and to modify this use the controls indicated in the CONTROL METHOD column on the extreme right of the page.

### 22 • FEEDBACK • 0-7

The FEEDBACK control which operates on oscillators 1 to 5, changes the harmonic content of the two oscillators, thereby varying the waveform. (From a sinewave, you can make white noise).

As you can see, S 1 is flashing in this display, and this means that the present FEEDBACK setting of 4 (as shown in brackets) on SOUND 1, is ready to be modified if necessary.



### 23 • OCTAVE • 1-8

Transposes the pitch of each SOUND to various octaves.

Here you will see the OCTAVE that you have chosen to use for each of the SOUNDS, shown on the bottom line; The setting for S1 or S2 will be shown in brackets, according to which one is flashing, and this can be changed while flashing by use of the VALUE or +/- controls.

### 24 • SEMITONE TRANPOSE • -8 +8

Changes the tuning of each SOUND by a number of semitones equal to the parameter number.

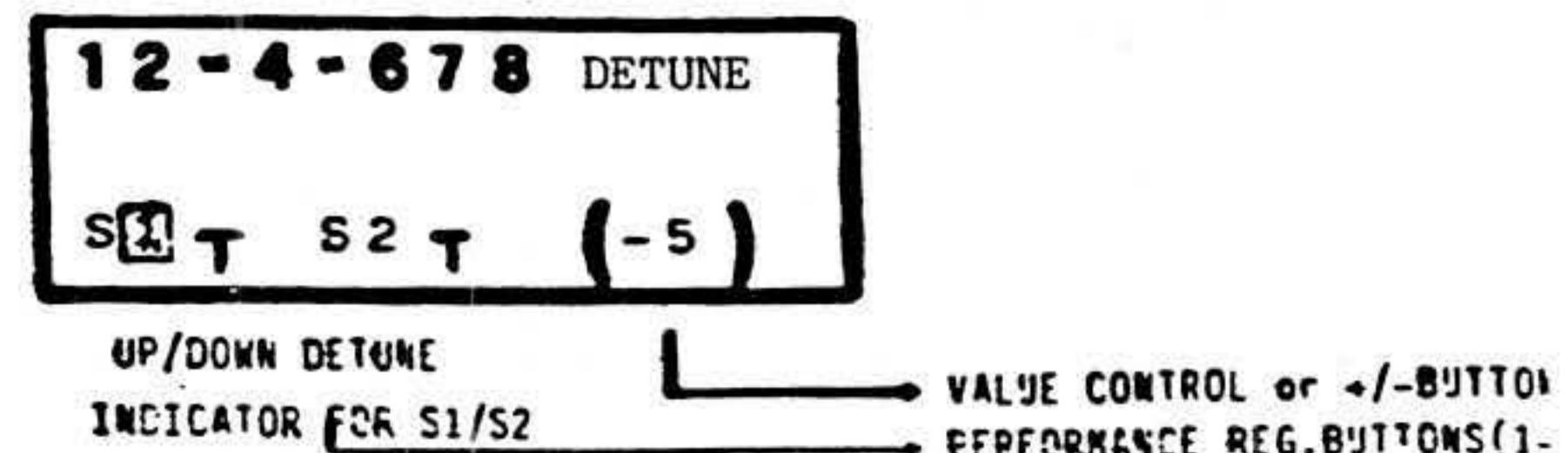
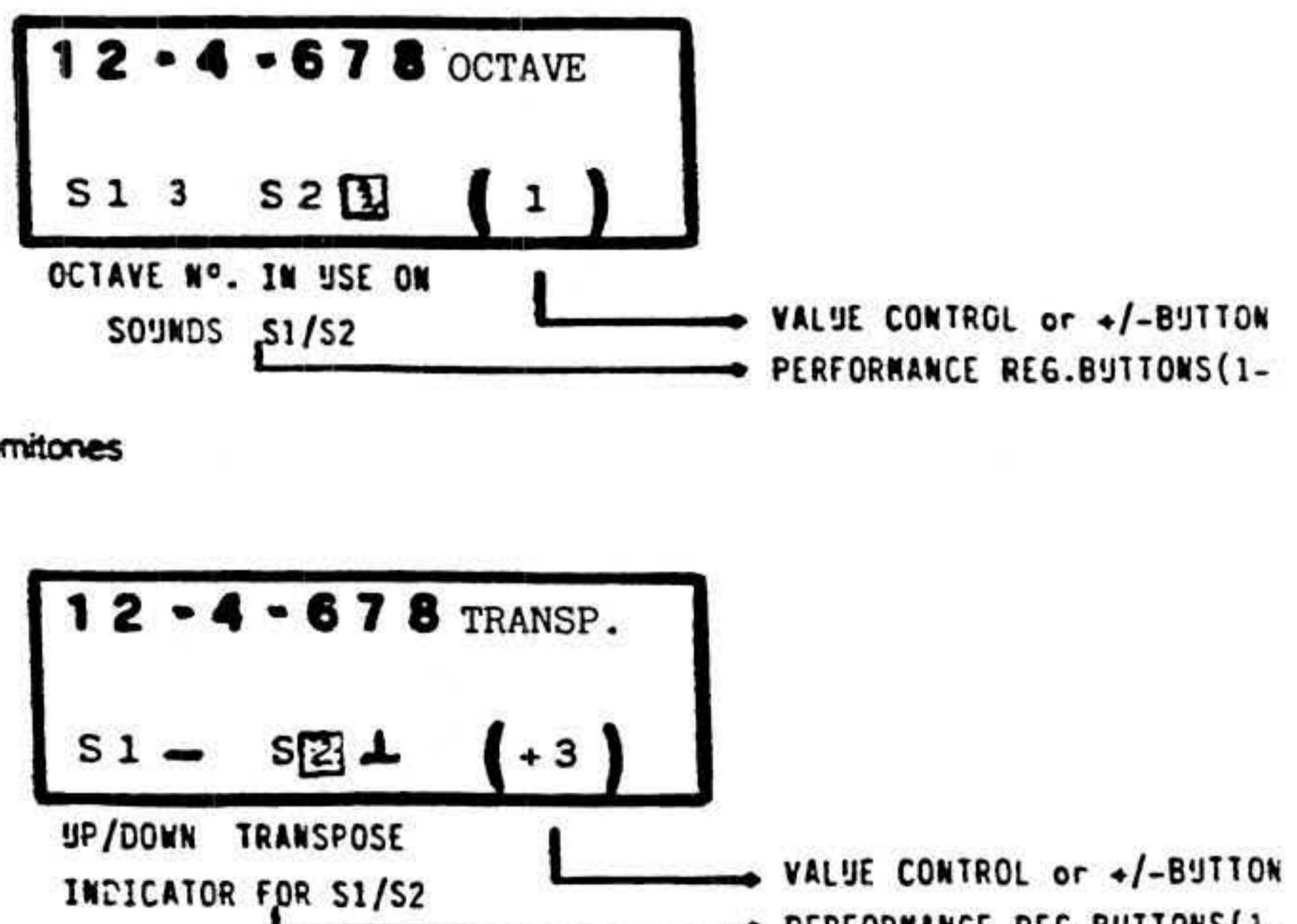
The bottom line of this display will be telling you in which direction you have chosen to TRANPOSE each SOUND. In the example shown, S 1 has not been transposed at all, and S 2 (flashing) is at present at 3 semi-tones above pitch and ready to be modified if required.

### 25 • DETUNE • -16 +16

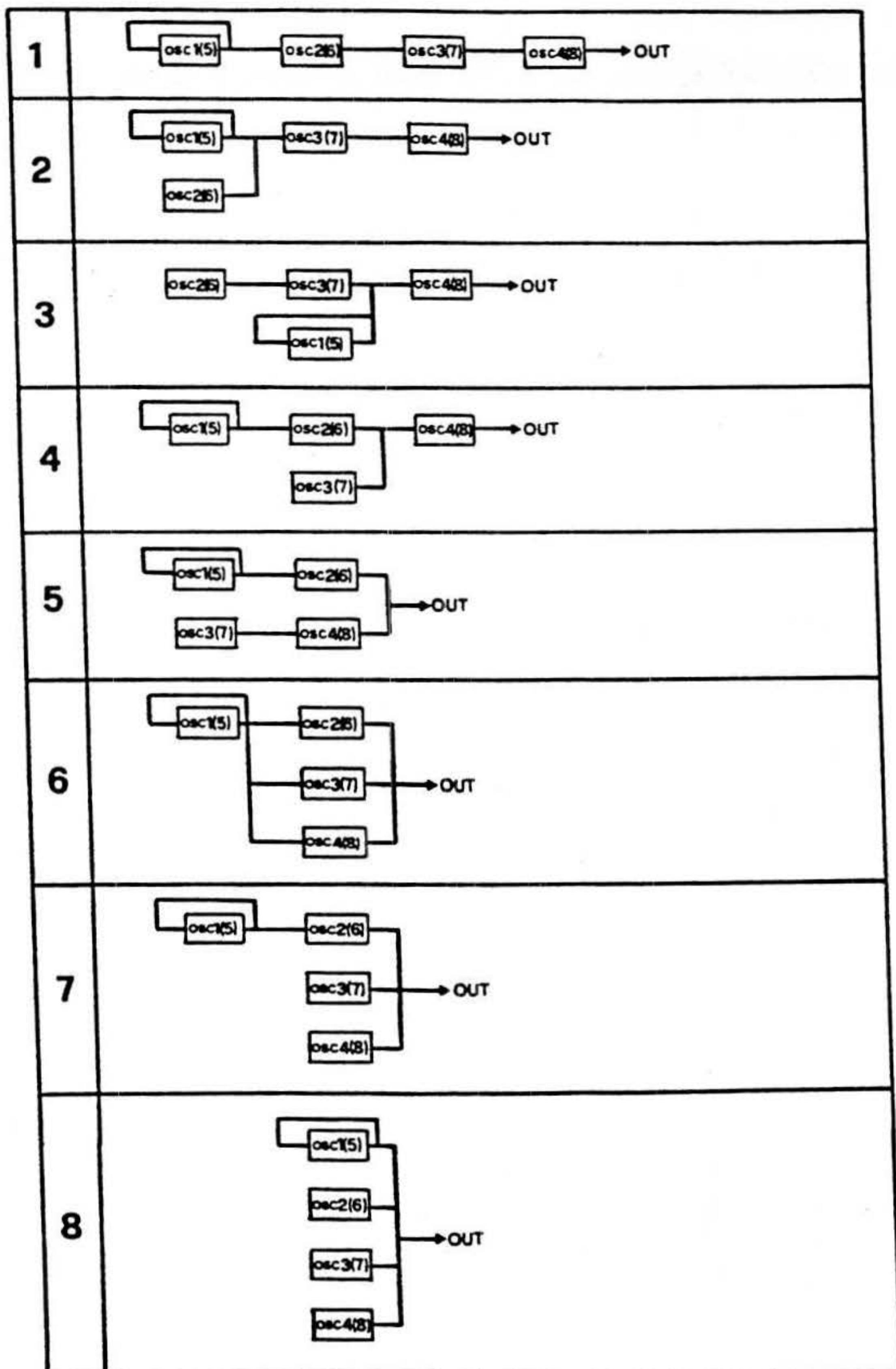
Changes the tuning of each SOUND at intervals of 1/16 of a semitone.

This parameter is really a 'Fine Tuning' control and by means of the VALUE control for bigger changes or the +/- buttons for 1/16 of a semi-tone step changes, you can tune each SOUND very accurately.

In this case S 1 (flashing) has been detuned by 5/16 th's of a semi-tone and is ready to be varied if necessary.



## OSCILLATOR COMBINATION



## 26 • PITCH ENVELOPE ATTACK • 0-127

Varies the PITCH Envelope rising speed, when types 1 to 3 have been selected.

0 = No effect

1 = Minimum speed

127 = Maximum speed

The PITCH ENVELOPE ATTACK on S 2 (flashing) has been set to 82 in this example, and can be modified if required. If you want to see the exact setting of S 1, then just press PERFORMANCE REGISTRATION button N° 1 and the setting will show in the brackets.

## 27 • PITCH ENVELOPE DECAY • 0-127

Controls the falling speed of the PITCH Envelope.

In this example the PITCH ENVELOPE DECAY of SOUND 1 (flashing) is shown to be set at 60, this of course can be modified if needed by means of the controls in the CONTROL METHOD column on the right.

## 28 • PITCH ENVELOPE LEVEL • 0-127

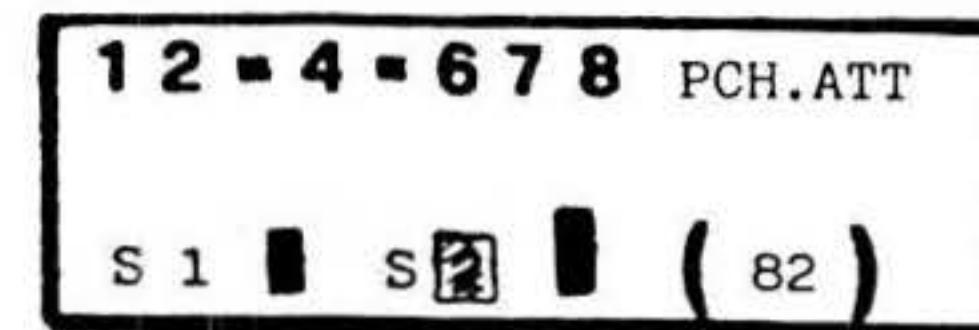
Varies the amount of change in frequency decided by the PITCH ENVELOPE.

From the display in this example you will see that the PITCH ENVELOPE LEVEL for SOUND 2 has been set to 0. This can be varied if necessary or if you want to see the exact setting of this Level on SOUND 1, then press PERFORMANCE REGISTRATION N° 1 and the setting will be shown in brackets.

## 29 • PITCH ENVELOPE TYPE • 1-4

Decides the curve with which the PITCH ENVELOPE changes the frequency.

SOUND 1 in this display will be controlled by curve N° 2 as is shown in brackets and to the right of the S 1 symbol which is flashing, meaning that the curve can be changed if felt to be necessary.



PITCH ATTACK INDICATOR

FOR SOUND 1 and 2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)



PITCH DECAY INDICATOR

FOR SOUND 1 and 2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)

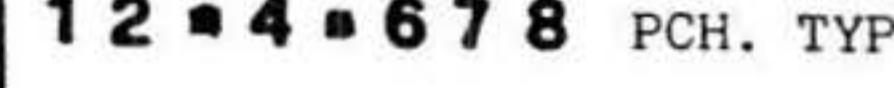


PITCH ENVELOPE LEVEL

INDICATOR FOR S 1 and S 2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)

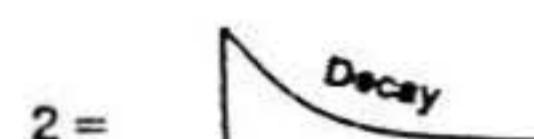


PITCH ENVELOPE CURVE

ALLOCATION IND. FOR S1/S2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)



## 30 • VIBRATO WAVE • ~ M RND

Selects the waveform of the VIBRATO for each SOUND.

~ = SINEWAVE

M = SAWTOOTH

RND = SQUARE WAVE

RND = RANDOM WAVEFORM

This display example is showing you the VIBRATO WAVE chosen for each SOUND. On SOUND 1 you have a Sawtooth Wave, and on SOUND 2 (flashing) and ready to be changed if required, the VIBRATO waveform is of a Sinewave type.

## 31 • VIBRATO SPEED • 0-31

Varies the VIBRATO frequency of each SOUND

0 = No effect

31 = Maximum speed

By pressing the respective PERFORMANCE REGISTRATION buttons (1 or 2) you will be able to see the exact SPEED setting of the VIBRATO used on SOUND 1 and SOUND 2. At present the display is showing a setting 15 on SOUND 2 (flashing).

## 32 • VIBRATO DEPTH • 0-127

Controls the depth of the modulation of the SOUNDS.

0 = No effect

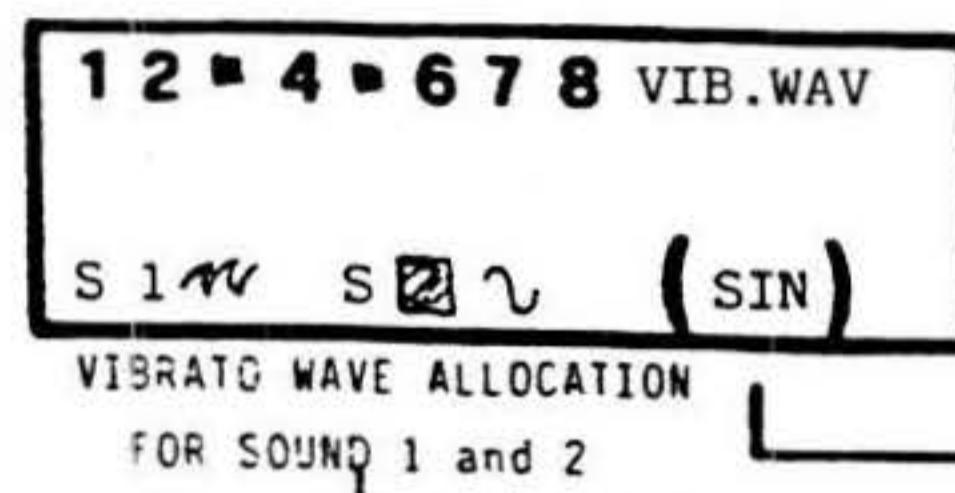
127 = Maximum depth

This display works in the same way as the last parameter, but in this case it is telling you the VIBRATO DEPTH settings which in the case of SOUND 1, flashing and ready to be changed if necessary, is 44. To see the setting on SOUND 2 just press the respective PERFORMANCE REGISTRATION button.

## 33 • VIBRATO DELAY TIME • 0-127

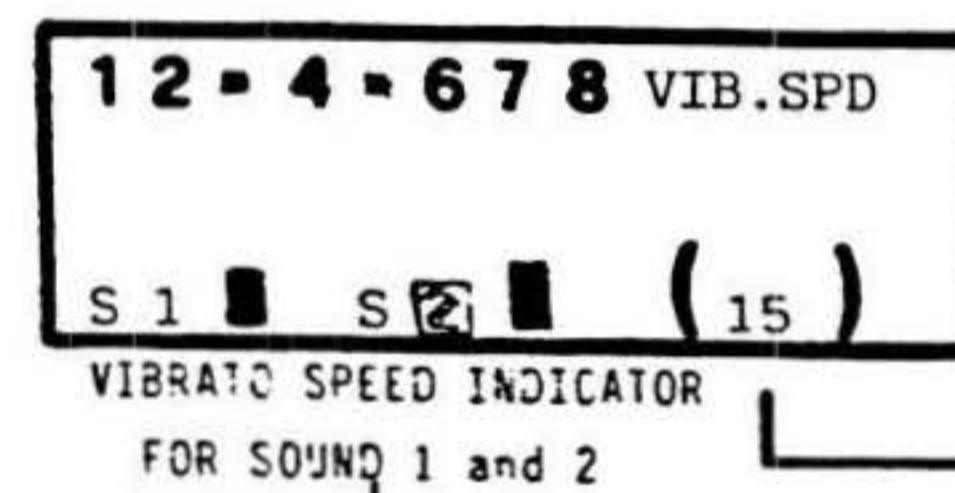
This parameter varies the time delay from when you press the key, to when the VIBRATO begins to take effect.

Here, exactly the same type of display will be seen, but this time you will be getting information on the settings of the VIB. DELAY TIME on each SOUND. This example is telling you that the DELAY setting on SOUND 2 is at 0.



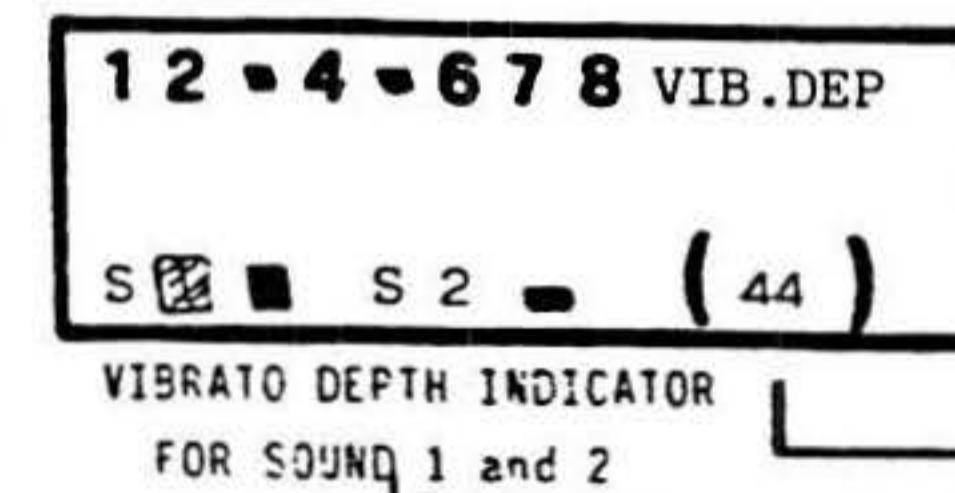
VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)



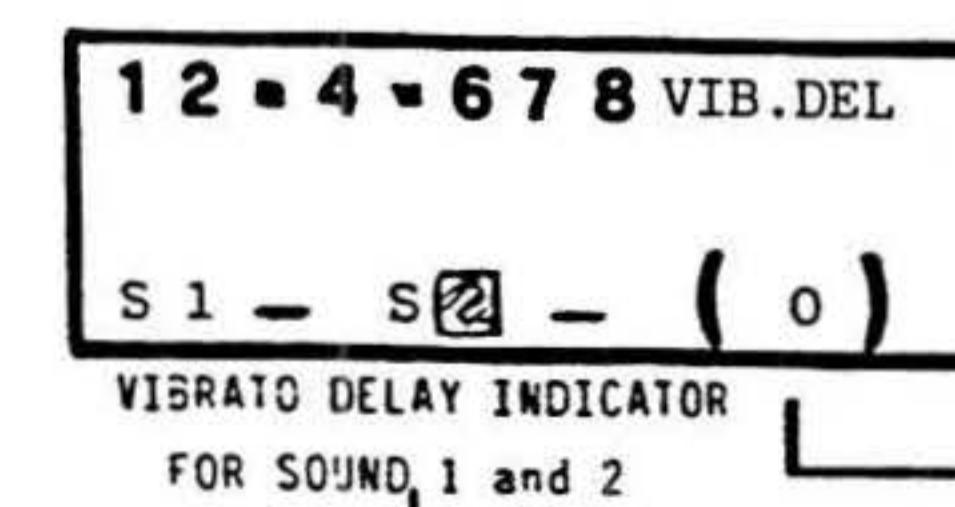
VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)



VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)



VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)

Defines the maximum modulation depth of the VIBRATO assigned to the three modulation methods (WHEEL, MODULATION, SECOND TOUCH).

This parameter is controlled in exactly the same way as parameters 31,32 and 33 and the display features are the same,only that in this case you are controlling and looking at VIBRATO MC information .In this particular display,you are being told that the max. VIBRATO DEPTH MC used on SOUND 2 is set at 7.

## 35 • REPEAT • 0-7

The REPEAT effect simulates the repetitive pressing of the key.

0 = No effect

7 = Maximum repeat speed

The REPEAT speed settings for each SOUND can be called up and controlled from this display by pressing the respective PERFORMANCE REGISTRATION button. In this example S 2 is shown to have a REPEAT speed of 6.

## 36 • CHORUS • OFF-

The CHORUS produces a warm and pleasant effect which results in a richer,fuller sound.

Off = No effect

1 = Slow modulation

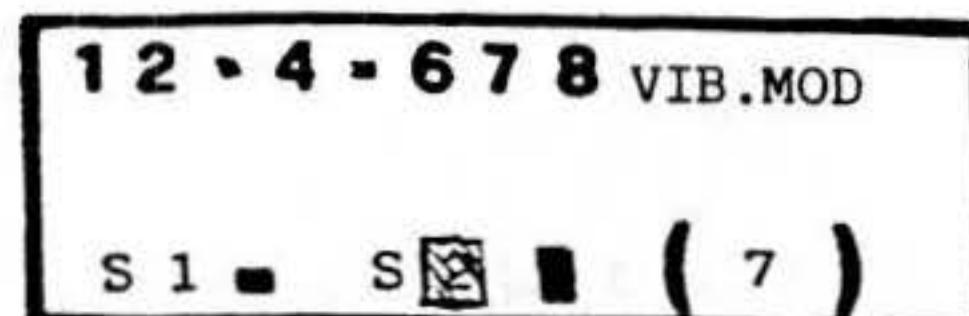
2 = Fast modulation

The CHORUS Off/On function is kept under control with this display, and the three possibilities that can be used are easy to be seen on the bottom line. This display is showing you that you are using a Slow modulation on SOUND 1 (flashing) and that you can either turn it off or go to a Fast modulation if you wish.

## 37 • LEVEL • 0-127

Controls the VOLUME of the two SOUNDS, so acting as a mixer.

From this display you can control the LEVEL of the two SOUNDS by setting the number in brackets accordingly to obtain the mixing of the SOUNDS that you require.

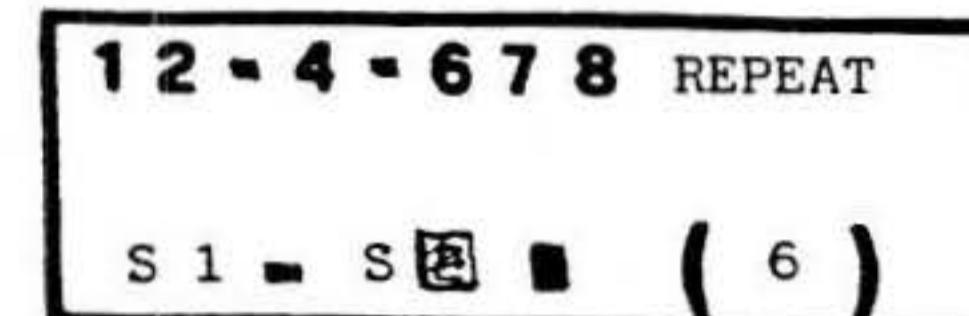


VIBRATO DEPTH MC INDICATOR

FOR SOUND 1 and 2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)

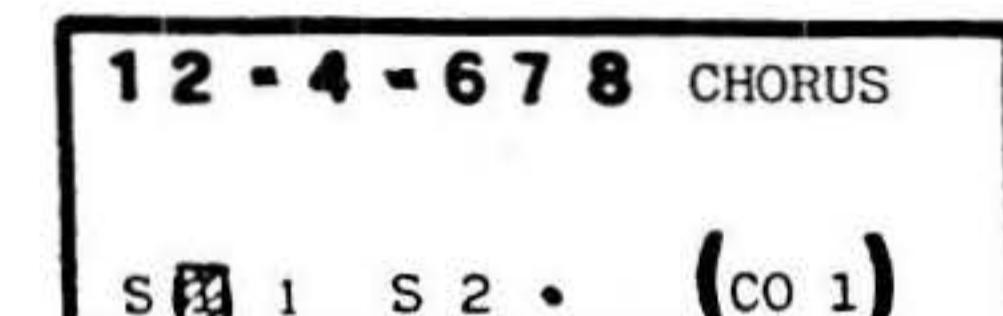


REPEAT SPEED INDICATOR

FOR SOUND 1 and 2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)

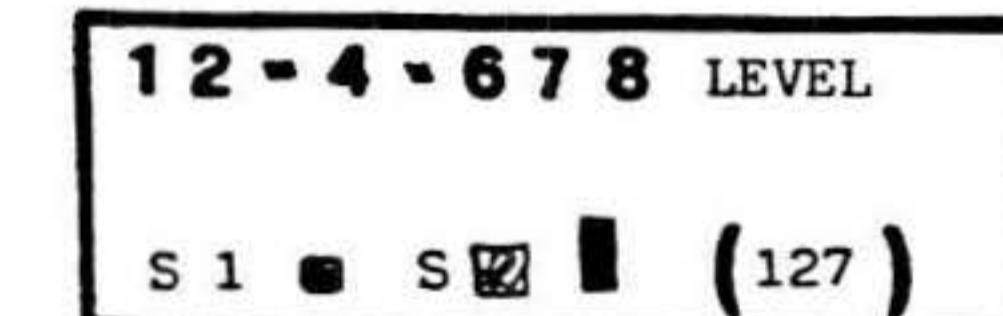


CHORUS TYPE INDICATOR

FOR SOUND 1 and 2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)



LEVEL INDICATOR

FOR SOUND 1 and 2

VALUE CONTROL or +/- BUTTONS

PERFORMANCE REG.BUTTONS(1-2)

## COMPARE

By means of this function, it is possible to compare the PRESET that you are editing (that is, all the parameter values) with that of the original and with any other PRESET of the instrument.

To enter into this function, just press the EDIT/COMPARE button again. At this point it is possible to carry out a comparison with the original PRESET, simply by pressing the ENTER button while if you want to compare it with another PRESET, you must

form the number of the PRESET that you are interested in, and then press the ENTER button.

In both cases the value of the compared parameter will flash on the display to indicate that you are working in the COMPARE function.

To continue with the editing of the PRESET, you must press the EDIT/COMPARE button again.

## COPY

The COPY function enables you, while programming, to copy various parameters, therefore making the creation of new PRESETS very much easier.

Four possibilities exist:

1 - To copy all the envelope parameters (ATTACK, DECAY, SUSTAIN LEVEL, SUSTAIN RATE, RELEASE, ENV., SCALING) from one oscillator to the other. It is only possible to carry out this operation when you are editing a parameter from 1 to 12. Then press the COPY button, which will then make the message, COPY ENV. of OSX to.....? (X = Oscillator that you are editing). Then press, by means of the OSCILLATOR SELECTOR, the button corresponding to the oscillator where you want to transfer the whole envelope.

2 - The transfer of all the parameter values from 1-12 and from 21-38 from one SOUND to another.

To carry out this operation, you must first edit a parameter from 21 to 38 and then press the COPY button. The display will now show: COPY All SND X to.....? (X = Sound that you are editing). After this, by means of the SOUND SELECTOR, press the button relative to the SOUND that you want to transfer all the parameter values to.

To interrupt these first two COPY possibilities, you need to press the COPY button again.

It is possible, with the two methods described above, in the COMPARE function, to copy and transfer all the relative values of the envelopes and the PRESET SOUNDS in COMPARE, to the PRESET that you are editing.

3 - Furthermore, you can copy (without pressing the COPY button) the parameter values of one oscillator to another or from one Sound to another, by simply pressing, by means of the first eight buttons of the PERFORMANCE REGISTRATIONS, the OSCILLATOR or SOUND selector from which you want to copy the value, and at the same time, pressing the OSCILLATOR or SOUND selector to which you want to transfer the value.

4 - The COPY function also gives you the possibility to simultaneously transfer all the PRESETS and the PERFORMANCE REGISTRATIONS from the INTERNAL memory to that of the CARTRIDGE and vice-versa.

This facility is available only in the NORMAL MODE and not during programming. Press the RECORD button and at the same time, the INTERNAL button, if you want to transfer from the CARTRIDGE and record into the internal memory. If, however you need to transfer from the internal memory and record in the Cartridge's memory, then you must press the RECORD and CARTRIDGE buttons simultaneously.

The following message will appear on the display:

**Copy PRESET (Y)  
or PERFORMANCE (N)**

Press the YES button if you want to copy the PRESETS, and that marked NO, if you will be copying the PERFORMANCE REGISTRATIONS.

You can then write on the display, from which points you would like to begin and end the COPY and the number of the programme into which the first PRESET or PERFORMANCE REGISTRATION to be copied, will be transferred.

Example: If you want to make a COPY of the CARTRIDGE PRESETS from nr. 70 to nr. 90 and then transfer them to the internal memory from nr. 65 to nr. 85, then proceed as follows:

- 1) Press RECORD and INTERNAL buttons simultaneously.
- 2) Then press the YES button.
- 3) Write nr. 70 and press the ENTER button. This means that you will have selected the number of the first PRESET to be copied.
- 4) Write nr. 90 and once again press the ENTER button. This will indicate the number of the last PRESET in the COPY.
- 5) Form nr. 65 and press the ENTER button. This determines the number of the programme into which you will be transferring the first number of the PRESETS to be copied.
- 6) On the display, you will now see the following message:  
Are you sure? (Y, N)
- 7) Press YES, if you want to complete the process. If you have made a mistake or you are not sure of the operation just made, then just press NO, and repeat the process.

Making a COPY from the internal memory (Internal RAM) to the CARTRIDGE, will take about 7 seconds for each PRESET, while to transfer each PERFORMANCE REGISTRATION you will need about 2 seconds.

## SAVE

With the **SAVE** function you can memorize a modified **PRESET** or one just created by means of **EDIT**. Carry out the following procedure:

1 - Press the **SAVE** button.

display:—

**NEW NAME (Y. N.)**  
**I 18 VIBES**

name of the initial Preset.

By means of the **VALUE** control or the + and - buttons, you can choose the numbers, letters and the symbols, while pressing the **ENTER** button or 0 of the **PARAMETER SELECTOR** section you will move the cursor to the left and to the right. After having formed the name of the **PRESET**, press **ENTER** up to the symbol on the right of the display, on which the following message will be shown:—

**SAVE TO? I. 18**  
**I 18 VIBES <**

2 - Press the **YES** button, if you want to write a new name or **NO** if you intend to leave the name of the original **PRESET**.

3 - Pressing **YES**, will show the following message on the display:—

**SELECT NAME**  
**... > VIBES <**

First of all, press either the **INTRNL** or **CARTR.** button, to select the memory that you intend to transfer all the data to, then form a number from 65 to 96 to insert the new **PRESET** into one of these positions.

Press the **ENTER** button to complete this procedure.

In such a case that you would like to interrupt the **SAVE** procedure it is necessary to press the **FUNCTION** or **EDIT** button once again.

**Functions****Transmission Data:**

1001nnnn	Key ON/Channel Number (n=0..15;Channel=1..16)
0kkkkkkk	Key Number (k=36;C1 - k=96;C6)
0vvvvvvv	Velocity (v=0;Key OFF, v=1..127;ppp..fff)
1011nnnn	Control Change/Channel
0ccccccc	Control number
0vvvvvvv	Control value
c = 1	Modulation lever (v=0;OFF, v=127;ON)
c = 4	Pedal (main) volume (v=0..127)
c = 64	Sustain foot switch (v=0;OFF, v=127;ON)
c = 65	Portamento foot switch (v=0;OFF, v=127;ON)
1100nnnn	Sound change/Channel
0ppppppp	Sound number (p= 0..95; Sound internal = 1..96) (p=96..127; Sound Cartridge = 65..96)
1101nnnn	After touch/Channel
0vvvvvvv	Touch value (v=0..127)
1110nnnn	Pitch bender/Channel
0vvvvvvv	value LSB (v=00)
0vvvvvvv	value MSB (v=0..127;64=centre)

**Reception Data:**

1000nnnn	Key OFF/Channel
0kkkkkkk	Key number
0vvvvvvv	Velocity (ignored)
1001nnnn	Key ON/Channel
0kkkkkkk	Key number
0vvvvvvv	Velocity (v=0;Key OFF, v=1..127;ppp..fff)
1011nnnn	Control change/Channel
0ccccccc	Control number
0vvvvvvv	Control value
c = 1	Modulation (v=0..127)
c = 4	Pedal volume (v = 0..127 )
c = 7	Channel volume
c = 64	Sustain foot switch (v=0;OFF, v=127;ON)
c = 65	Portamento foot switch (v=0;OFF, v=127;ON)
1100nnnn	Sound & Performance change/Channel
0ppppppp	Sound number (p= 0..95; Sound internal = 1..96) (p=96..127; Sound Cartridge = 65..96)
1101nnnn	After touch/Channel
0vvvvvvv	Touch value (v=0..127)
1110nnnn	Pitch bender/Channel
0vvvvvvv	value LSB (ignored)
0vvvvvvv	value MSB (v=0..127;64=centre)

**System exclusive Functions****FORMAT:**

11110000	STATUS
0iiiiiii	Identification Number (ELKA=47)
0ffffnnnn	Function/Channel
0ccccccc	Synthi-Code
0ppppppp	Parameter or Parameter group
(    0ddddddd	DATA           )
(    (    )	)
(    (    )	)
(    0sssssss	Checksum       )
11110111	EOT (End of Transmission)

- 1) Function      (-fff....) 0 = Panel-key simulation  
                    1 = Value-pot. simulation  
                    2 = Funct.Parameter group write  
                    3 = Funct.Parameter group Dump-Request  
                    4 = Sound Parameter group write  
                    5 = Sound Parameter group Dump-Request  
                    6 = Performance-register change
- 2)                Syst.excl. Channel (-...nnnn) 0..15 = Channel of first Split
- 3) Synthi-Code    (-ccccccc) 0..127 = ELKA-Synthi-Number  
                    9 = EK44 / EM44
- 4) Parameter     (-ppppppp) ASCII = Key-code (f=0)  
                    or 0..127 = Value of pot. (f=1)  
                    or 64..95 = Sound number (f=4,5)  
                    or 0..15 = Perf. Register (f=2,3)  
                    or 0..31 = Perf. Register (f=6)  
                    (0..15=internal/16..31=Cartridge)
- 5) Data            (-ddddd) 0..127 = Value or ASCII
- 6) Checksum      (-sssssss) 0..127 = Modulo 128 Sum of all Data-Bytes

**System exclusive Functions cont.****Transmission Data:**

11110000	STATUS / Performance register change
0iiiiiii	(i=47)
0ffffnnnn	(f=6, n=0)
0ccccccc	(c=9)
0ppppppp	(p=0..31; Performance register 1..16/CRT1..16)
11110111	EOT
11110000	STATUS / Performance parameter dump
0iiiiiii	(i=47)
0ffffnnnn	(f=2, n= see Syst.excl.FORMAT)
0ccccccc	(c=9)
0ppppppp	(p=0..15; Performance register 1..16)
0ddddd	(d=0..127; Data)
.	Data bytes see Table I
.	
0sssssss	(s= see Syst.excl.FORMAT)
11110111	EOT

## System exclusive Functions cont.

11110000	STATUS / Sound parameter dump
0iiiiiii	(i=47)
0ffffnnnn	(f=4, n= see Syst.excl.FORMAT)
0ccccccccc	(c=9)
0ppppppppp	(p=64..95; Sound intern,
0ddddddddd	(d=0..127; Data)
.	
.	Data bytes see Table II
.	
0sssssss	(s= see Syst.excl.FORMAT)
11110111	EOT

## Reception Data:

11110000	STATUS / Performance register change
0iiiiiii	(i=47)
0ffffnnnn	(f=6, n=ignored)
0ccccccccc	(c=ignored)
0ppppppppp	(p=0..31; Performance register 1..16/CRT1..16)
11110111	EOT
11110000	STATUS / Performance parameter dump-request
0iiiiiii	(i=47)
0ffffnnnn	(f=3, n= see Syst.excl.FORMAT)
0ccccccccc	(c= see Syst.excl.FORMAT)
0ppppppppp	(p=0..15; Performance register 1..16)
11110111	EOT (Transmission begins after reception of EOT) (Transmission format see Syst. excl. transmission data)
11110000	STATUS / Sound parameter dump-request
0iiiiiii	(i=47)
0ffffnnnn	(f=5, n= see Syst.excl.FORMAT)
0ccccccccc	(c= see Syst.excl.FORMAT)
0ppppppppp	(p= 64..95; Sound intern.)
11110111	EOT (Transmission begins after reception of EOT) (Transmission format see Syst. excl. transmission data)
11110000	STATUS / Panel-key simulation
0iiiiiii	(i=47)
0ffffnnnn	(f=0, n= see Syst.excl.FORMAT)
0ccccccccc	(c= ignored)
0ppppppppp	(p=ASCII, key code see table III)
11110111	EOT (this function has the same effect as pressing a button on the front panel)
11110000	STATUS / Value potentiometer simulation
0iiiiiii	(i=47)
0ffffnnnn	(f=1, n= see Syst.excl.FORMAT)
0ccccccccc	(c= ignored)
0ppppppppp	(p=0..127, value of pot.)
11110111	EOT (this function has the same effect as setting the value pot. to a certain value)

Reception of the performance parameter dump and sound parameter dump is of the same format as transmission (see Syst. excl. transmission data).

TABLE I MIDI dump Function parameter list (EK 44/EM 44/ER 44/ER 33)

data byte nr.	MIDI dump	parameter
1	00ss0vvv	vibrato modulation cont. source
2	00ss0vvv	level modulation cont. source
3	00ss000p	pitch modulation cont. source ss = 0 : wheel ss = 1 : modulation] = source ss = 2 : second touch vvv = 0..7 : mod. depth p = 0/1 : neg./pos.
4	0..7	portamento time
5	1..8	current edited split (display) do not change !!!
6	0000p1mo	MIDI-flags p = 0/1 : prog.change off/on m = 0/1 : mod.control off/on o = 0/1 : omni mode off/on
7	48..80*	detune DCG 1
8	48..80*	detune DCG 2 (not used on ER 33)
9	0..12	pitch range DCG1
10	0..12	pitch range DCG2 (not used on ER 33)
11..18	0lpppppp	split points split 1..8 l = 0/1 : local on/off pppppp = 0..60 : split point 0 = C1 of keyboard split point 'n' must be equal or greater than splitpoint 'n-1' !!! split point '8' must be 60 (C6) !!!
19..26	0..12**	octave transposes split 1..8
27..34	0..15	MIDI channels split 1..8 the channels of different splits may be equal or different
35..42	0000lvph	Split flags split 1..8 l = 0/1 : level mod.cont.off/on v = 0/1 : vibrato m.c. off/on p = 0/1 : portamento off/on h = 0/1 : pedal hold off/on
43..50	0..127	sound levels of split 1..8
51	0xxxxxxxx	Play Mode do not change !!!
52	36..96	SPLIT point for single split (36 = C1 !)
53..60	0..127	preset nr. of split 1..8 0..95 = internal 1..96 96..127 = cartridge 65..96

\* 64 = centre    \*\* 6 = centre

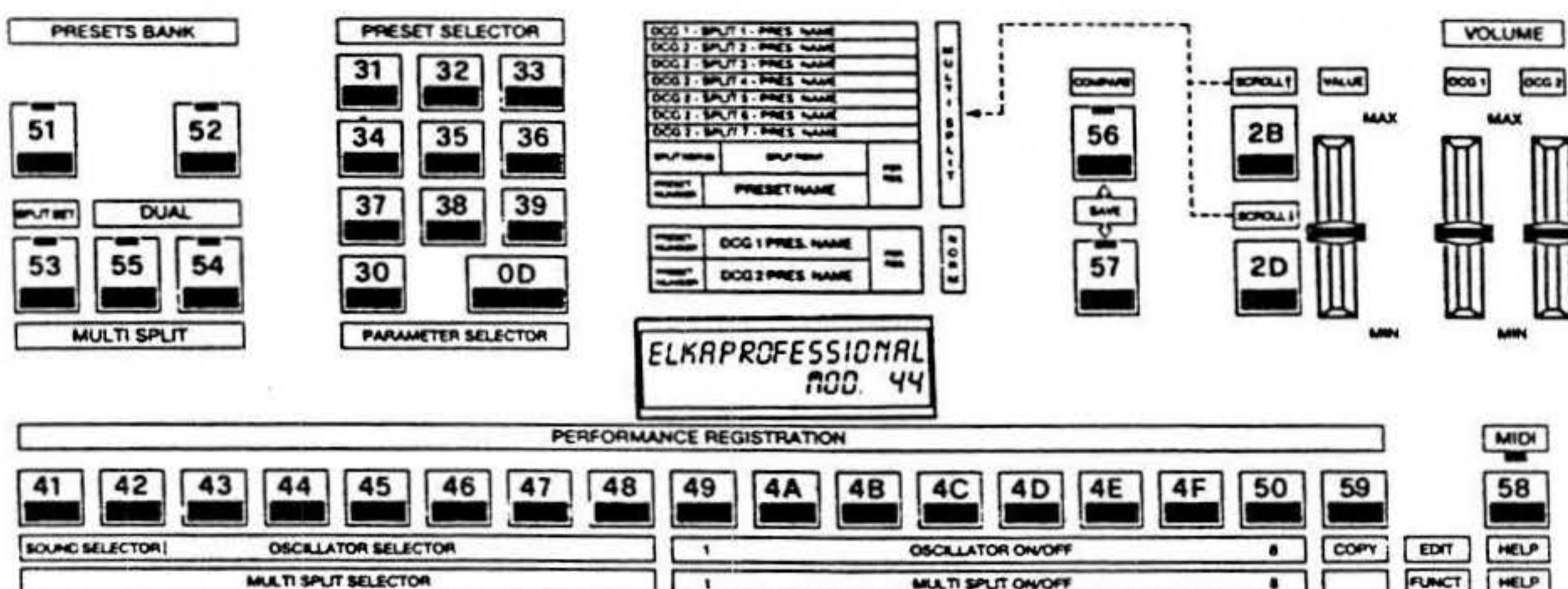
TABLE II MIDI dump

Sound parameter list (EK 44/EM 44/ER 44/ER 33.)

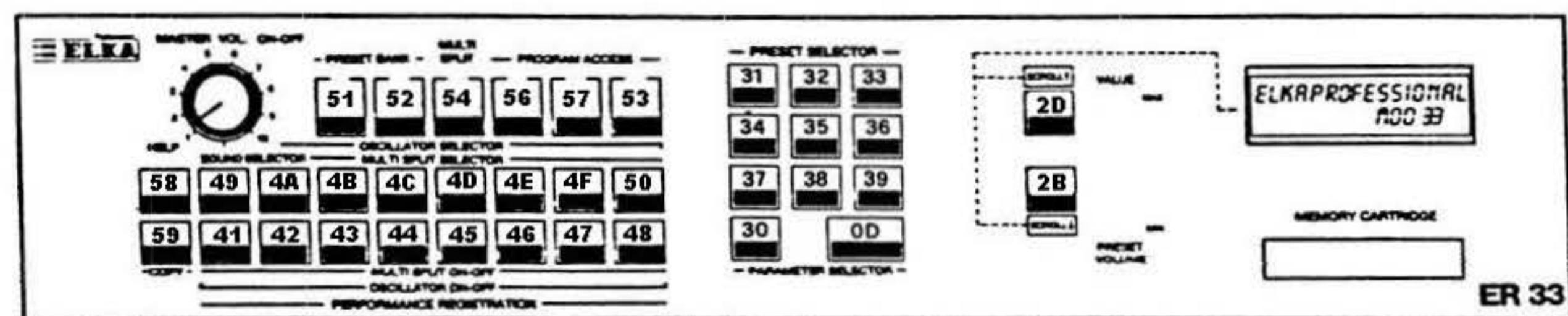
data byte nr.	range	parameter
SOUND 1 - OSCILLATOR 1 parameters		
1	0..15	rel. frequency
2	61..67*	detune
3	0..31	env. attack rate
4	0..31	env. decay rate
5	0..15	env. sustain level
6	0..31	env. sustain rate
7	0..15	env. release rate
8	0..3	env. scaling type
9	0..127	oscillator level
10	0..1	level scal. sign (0=neg/1=pos)
11	0..127	level scaling value
12	0..127	key velocity sensitivity
SOUND 1 - OSCILLATOR 3 parameters		
13..24		same order as OSC 1 parameters
SOUND 1 - OSCILLATOR 2 parameters		
25..36		same order as OSC 1 parameters
SOUND 1 - OSCILLATOR 4 parameters		
37..48		same order as OSC 1 parameters
SOUND 1 - SOUND parameters		
49	0000dcba	mask osc. off/on a = 0/1 : osc.1 off/on b = 0/1 : osc.2 off/on .....
50	0..7	osc. combination
51	0..7	feedback
52	0..7	octave
53	58..70*	transpose
54	48..80*	detune
55	0..127	pitch attack rate
56	0..127	pitch decay rate
57	0..127	pitch level
58	0..3	pitch envelope type
59	0..3	vibrato wave
60	0..31	vibrato speed
61	0..127	vibrato depth
62	0..127	vibrato delay
63	0..7	vibrato depth m.c. sensitivity
64	0..7	repeat
65	0..2	chorus
66	0..127	sound level
67		reserved for future expansion
SOUND 2 - OSCILLATOR & SOUND parameters		
68..134		same order as SOUND 1 osc. & sound parameters
135		reserved for future expansion
NAME of preset		
136-144	ascii (7 bit)	name of preset (9 byte)

\* 64 = centre

TABLE III Hex codes for key simulation (EK44/EM44)



Hex codes for key simulation (ER 44/ER 33)



EK 44/EM 44  
MODEL ER 44/ER 33 MIDI Implementation ChartDate: 01.04.87  
Version: 1.1 ; 2.8

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1-16 1-16	1-16 1-16	Memorized
Mode	Default Messages Altered	1,3 0 0	0	Memorized in Performance Registration
Note Number	True Voice	36-96 12-108	12-108 12-108	Depends on transposition
Velocity	Note ON Note OFF	X 0	X 0	
After Touch	Key's Ch's	X	X	
Pitch Bender		X	X	
Control Change	1 Modulation	X	X	
	7 Main Volume (Pedal)	X	X	
	64 Sustain Pedal	X	X	
	65 Portamento Pedal	X	X	
Prog Change	True*	Ø....127	Ø....127	
System Exclusive		X	X	Performance Rec. Etc.
System Common	:Song Pos :Song Sel :Tune	0 0 0	0 0 0	
System RealTime	:Clock :Commands	0	0	
Aux Mes-sages	:Local ON/OFF :All Notes Off :Active Sense :Reset	0 0 X 0	0 0 X 0	Internal for all splits
Notes	8 Splits 8 Midi Channels	8 Polyphonic sounds at one time 8 midi channels		Completely controllable via system exclusive

Mode 1: OMNI ON, POLY  
Mode 3: OMNI OFF, POLYMode 2: OMNI ON, MONO  
Mode 3: OMNI OFF, MONOX: Yes  
0: No

## USING THE MULTISPLIT MODE WITHIN A MIDI SEQUENCING SET-UP

In this mode it is possible to use all 9 voices available on the ER 33.

The voices on the DCG are dynamically assigned according to usage. So there are 8 splits available within 9 voices. Carefull use of the DCG will allow you to use these 9 voices to the fullest potential.

For this example imagine that you will be using all 8 SPLITS that are available to you. The sounds that you require are: PIANO 2, VIBES, SLAP BASS, TIMPANI, SOUND TRACK, GTR-STRINGS, TUB, BELLS and SPATIAL.

1. Press the **MULTISPLIT** button.
2. Do not worry that it is at the bass end of the keyboard in terms of depth and placement, you can always transpose any of the SPLITS in terms of octaves.  
You may either assign the program number, then enter the SPLIT POINT etc or you if you know the piece of music in advance you could enter all the SPLIT POINTS in one session. We suggest you use the following process until you are fully aware of all the possibilities.
3. Press **FUNCTION** - Enter 20 - Press **ENTER** - Turn OMNI Mode Off.
4. Press **INTERNAL** - Enter 2 - Press **ENTER** - PIANO 2 should appear.  
-- Press **PR.1** --
5. Press **FUNCTION** - Enter 13  Assign SPLIT POINT by the **VALUE** +/- slider.  
The PR numbers give you the split number. You should be on SPLIT 1 - raise slider to show G2 - this means that the PIANO 2 will be present from C1-G2. Should you wish to raise the OCTAVE of the PIANO 2 then proceed as follows:  
6. Press **FUNCTION** - Enter 14 - Raise OCTAVE by +1/+2 - Press **INTERNAL**.
7. The VIBES tone will be used in a duophonic mode with some playing in a monophonic tone. The above process should be repeated as follows:  
8. Press **SCROLL/NO** Button - SPLIT 2 will appear.
9. Enter 18 - Press **ENTER** - VIBES will appear.  
-- Press **PR.2** --
10. Press **FUNCTION** - Enter 13  Assign SPLIT POINT to D3.
11. Press **INTERNAL**.
12. Press **SCROLL/NO** Button - SPLIT 3 will appear.
13. Enter 29 - Press **ENTER** - SLAP BASS will appear.  
-- Press **PR.3** --
14. Press **FUNCTION** - Enter 13  Assign SPLIT POINT to C4.
15. Enter 14 - Press **PR.3** - BASS sound to be transposed by 2 OCTAVES, by the **VALUE** slider take SPLIT 3 down - 2 octaves then Press **INTERNAL**.

The above procedure should be repeated for all eight sounds, not only can the OCTAVE be transposed, but the MODULATION CONTROL for each SPLIT (16/17), the PEDAL SUSTAIN (18) and the PORTAMENTO (19) may be enabled or disabled. The MIDI channels for each SPLIT may also be changed by **FUNCTION 15**. The SPLIT N. that you are playing, will be seen in the display on reception of a **NOTE ON** command.